STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

November 27, 2018

N.C. Division of Coastal Management
1638 Mail Service Center
Raleigh, NC 27699-1638

ATTN: Ms. Cathy Brittingham, NCDOT Coordinator

Subject: Certification for DCM Consistency for the proposed US 70 Havelock Bypass in Craven County. TIP No. R-1015. WBS 34360.1.2.

Dear Madam:

The purpose of this letter and information package is to request concurrence from the Division of Coastal Management (DCM) for the North Carolina Department of Transportation's (NCDOT) consistency certification for the above-mentioned project. This package consists of the supporting information permit drawings, utility drawings, roadway plan sheets, and Division of Mitigation Services acceptance letter.

NCDOT proposes to construct a new US 70 bypass of Havelock, North Carolina in Craven County. The preferred alternative originates at an interchange with existing US 70, just north of SR 1760 (Hickman Hill Loop Road) and extends 10.3 miles to terminate at an interchange with existing US 70 southeast of SR 1824 (McCotter Boulevard). Full control of access is proposed.

NCDOT has applied for a U.S. Army Corps of Engineers (USACE) Section 404 Individual Permit as well as a N.C. Division of Water Quality (DWQ) Individual 401 Water Quality Certification.

NCDOT has reviewed the State's coastal program under 15 CFR 930.58 and 15A NCAC 07M. Specifically, we have considered the shoreline erosion, mitigation and coastal water quality policies, and the Craven County CAMA Core Land Use Plan as well as the City of Havelock 2030 Comprehensive Plan. NCDOT certifies that the proposed activity complies with the enforceable policies of North Carolina's approved management program and will be conducted in a manner consistent with said program.

If you have any questions or need additional information, please contact Gordon Cashin at (919) 707-6107 or gcashin@ncdot.gov.

Sincerely,

Philip S. Harris III, P.E., C.P.M., Unit Head
Environment Analysis Unit

cc: Mr. Stephen Lane, NCDCM

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

Telephone: (919) 707-6000
Customer Service: 1-877-368-4968
Website: www.ncdot.gov

Location:
1000 BIRCH RIDGE DRIVE
RALEIGH NC 27610

Coastal Zone Consistency Certification Supporting Information for the NCDOT's Request to Construct the Proposed US 70 Havelock Bypass in Craven County. TIP No. R-1015.

History

The proposed bypass was initially included in the 1979 Havelock Thoroughfare Plan, and then included in the NCDOT State Transportation Improvement Program (STIP) in 1983. The proposed project is included in local thoroughfare plans and shown in the 2012-2018 STIP and is a Strategic Highway Corridor project. Project development studies for the proposed project began in 1992 for preparation of an Environmental Assessment, which was approved in January 1998.

Alternatives

Along with the No-Build alternative, a Transportation Systems Management (TSM) alternative, a Travel Demand Management (TDM) alternative, and Mass Transit alternatives, the National Environmental Policy Act (NEPA)/Section 404 merger team reviewed numerous preliminary build alternatives for R-1015. Ultimately, three new-location build alternatives were carried forward for detailed study (FEIS, p. 2-19).

NEPA/404 Merger process

This project was transitioned into the NEPA/404 Merger process in 1997 during the alternatives development stage. The Merger process is an interagency procedure integrating the regulatory requirements of Section 404 of the Clean Water Act into the NEPA decision making process. As explained in the Record of Decision (ROD) (p. 3), the Draft Environmental Impact Statement (EIS) presented decisions and studies resulting from agency coordination efforts, many of which pre-dated the Merger process. This included agency concurrence on Purpose and Need, as well as NCDOT's recommendation of Alternative 3 as the preferred alternative. The NCDOT Corridor Selection Committee endorsed the selection of Alternative 3 as the preferred alternative on August 27, 1998. On January 18, 2001, the Merger Team approved avoidance and minimization measures for the revised project design. In December 2003, FHWA directed that an EIS be prepared for the project. This involved revisiting the analysis of alternatives, and release of the DEIS in September 2001, and subsequent public review. The Merger Team reaffirmed Alternative 3 as the Least Environmentally Damaging Practicable Alternative (LEDPA) on April 10, 2012.

The NEPA/Section 404 Merger Team met on August 20, 2014 to discuss Avoidance and Minimization [Concurrence Point (CP) 4A]. The Merger Team concurred on Avoidance and Minimization for R-1015 at this meeting. CP 4B and CP 4C where held on August 20, 2014 and April 19, 2018 respectively.

Document Status

The NCDOT completed the Final Environmental Impact Statement (FEIS) in October 2015 in compliance with NEPA guidelines. The FEIS explains the purpose and need for the project, provides a description of the alternatives considered, and characterizes the social, economic, and environmental effects. The FEIS was approved and circulated to federal, state, and local agencies. Then following the FEIS, a ROD was completed in December 2016. Copies of the project documents have been provided to regulatory review agencies involved in the approval process. Additional copies are available at https://xfer.services.ncdot.gov/pdea/EnvironmentalDocs/Documents/.

Project Description

The proposed R-1015 action involves construction of a new US 70 Bypass of Havelock, North Carolina in Craven County. The Preferred Alternative originates at an interchange with existing US 70, just north of SR 1760 (Hickman Hill Loop Road) and extends 10.3 miles to terminate at an interchange with existing US 70 southeast of SR 1824 (McCotter Boulevard). Full control of access is proposed.

Avoidance and Minimization

All jurisdictional features were delineated, field verified and surveyed within the corridor for R-1015. Using these features, preliminary designs were adjusted to avoid and/or minimize impacts to jurisdictional areas. NCDOT employs many strategies to avoid and minimize impacts to jurisdictional areas during design. Many of these strategies have been incorporated into BMP documents that have been reviewed and approved by the resource agencies and which will be followed throughout construction. All wetland areas not affected by the project will be protected from unnecessary encroachment. Individual avoidance and minimization items are outlined in pp. 15-19 of the ROD.

Summary of Impacts

The ROD (p. 11) anticipated that the "Selected Alternative would create 2,940 linear feet of impact to jurisdictional streams and 131 acres of impact to jurisdictional wetlands." The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent possible. Minimization of impacts during design has reduced wetland impacts by approximately 17 acres and stream impacts by 70 feet. Proposed permanent impacts to jurisdictional areas total 114.15 acres of permanent wetland impacts, 2,870 linear feet of permanent stream impacts (including 936 feet of intermittent streams and 1,934 of perennial streams), and 0.55 acre of permanent surface water impacts. The wetland impacts include 98.33 acres of non-riparian wetlands and 15.82 acres of riparian wetlands that will require mitigation. Additionally, there will be 7.43 acres of hand clearing due to roadway construction. There are 197,845 sq. ft. of riparian buffer impacts.

Utilities relocations have not been finalized. As a result, proposed utility impacts are preliminary and will require approval via a permit modification once plans are complete.

Mitigation

Compensatory mitigation for the unavoidable impacts to riparian wetlands, non-riparian wetlands, streams, and riparian buffers will be provided by the North Carolina Department of Environmental Quality (NCDEQ)-Division of Mitigation Services (DMS).

NCDOT has acquired compensatory mitigation for the unavoidable impacts to wetlands and streams for Havelock Bypass from the Croatan Mitigation Bank (CMB). The CMB wetland and stream restoration site is located in U.S. Geological Survey (USGS) Hydrologic Unit (HU) 03020204 and N.C. Division of Water Resources (NCDWR) Neuse River sub-basin 03-04-10, along the outer bend in the Neuse River between New Bern and the Pamlico Sound. The functional restoration of the CMB has occurred through a mixture of various treatments of hydrologic and vegetative restoration, enhancement, and or preservation. Each treatment for a specific area of the CMB was specifically designed to generate the best wetland functional improvement with the least disturbance practicable.

Stream and Wetland Credits in the CMB are controlled by the Umbrella Mitigation Banking Instrument (UMBI, revised June 2009)). Stream and wetland credits will be disbursed to offset unavoidable impacts from the Havelock Bypass project. The NCDOT has signed a Memorandum of Understanding (MOU)

with the U.S. Army Corps of Engineers (USACE) and the U.S Forest Service (USFS) (March 2, 2003). The purpose of the MOU is to assure that future management of the CMB site will result in the protection, maintenance and enhancement of the stream and wetland functions described in the mitigation plan. The current MOU was signed by NCDOT, USACE and USFS on March 2, 2003, and remains valid. Coordination is currently underway to prepare an updated MOA which if completed, may supersede the current MOU.

Federally Protected Species

Table 5 lists the federally protected species for Craven County as of April 25, 2018. These species are discussed extensively in Section 4.14.4 of the FEIS. Species with the federal classification of Endangered (E), Threatened (T), or officially Proposed (P) for such listing, are protected under Section 7 of the Endangered Species Act (ESA) of 1973, as amended. Species listed as Threatened due to Similarity of Appearance [T(S/A)], such as the American alligator, are not subject to Section 7 consultation. The Bald Eagle is protected by the Bald and Golden Eagle Protection Act and is not subject to Section 7 consultation. The FEIS also included a list and discussion for Carteret County because several project alternatives extended into Carteret. The selected alternative for the proposed project is limited to Craven County.

Table 5. Federally Protected Species Listed for Craven County

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion	County
Acipenser oxyrinchus oxyrinchus	Atlantic sturgeon	E	No	No Effect	Craven
Acipenser brevirostrum	Shortnose sturgeon	E	No	No Effect	Craven
Aeschynomene virginica	Sensitive joint-vetch	T	No	No Effect	Craven
Alligator mississippiensis	American alligator	T(S/A)	Yes	Not Required	Craven
Chelonia mydas	Green sea turtle	T	No	No Effect	Craven
Dermochelys coriacea	Leatherback sea turtle	E	No	No Effect	Craven
Haliaeetus leucocephalus	Bald Eagle	NA	Yes	NA	Craven
Myotis septentrionalis	Northern long-eared bat	T	Yes	MA-LAA	Craven
Picoides borealis	Red-cockaded woodpecker	E	Yes	MA-NLAA	Craven
Calidris canutus rufa	Red knot	T	No	No Effect	Craven
Trichechus manatus	West Indian manatee	E	No	No Effect	Craven
Lysimachia sperulaefolia	Rough-leaved loosestrife	E	Yes	No Effect	Craven

E – Endangered , T – Threatened, T(S/A) – Threatened due to Similarity of Appearance, MA-LAA - May Affect, Likely to Adversely Affect, MA-NLAA – May Affect, Not Likely to Adversely Affect, NA- Not applicable.

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Biological Conclusions for ESA Listed Species

The FEIS addressed the analysis of potential effects on this species on pp. 4-59 through 4-74, which concluded that the Biological Conclusion for the red-cockaded woodpecker (RCW) is May Affect, Not Likely to Adversely Affect. The USFWS concurred with that conclusion by letter dated November 19, 2013. This concurrence was based in part on NCDOT's agreement to allow periodic closures of the Bypass in order for Croatan National Forest Staff to conduct prescribed burns as management for the RCW. Additional coordination has taken place with USFWS as the project has continued to develop. Based on the latest information, NCDOT requested an updated concurrence from the USFWS by letter dated October 4, 2018, and the USFWS concurred that the project may affect, but is not likely to affect the RCW, in a response letter dated October 10, 2018.

The USFWS has developed a programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the northern long-eared bat (NLEB) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for NLEB for the NCDOT program is "May Affect, Likely to Adversely Affect." The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Craven and Carteret Counties where R-1015 is located.

Since the PBO does not include the USFS, NCDOT conducted surveys to further investigate potential effects on the NLEB. As discussed on pp.4-57 & 4-58 of the FEIS, these surveys concluded that the project will not affect the viability of NLEB on Croatan National Forest.

For the remaining ESA listed species, NCDOT has concluded the projects will have No Effect (see Table 5), and Section 4.14.4.1 of the FEIS.

Bald and Golden Eagle Protection Act (BGPA)

In the July 9, 2007 Federal Register (72:37346-37372), the bald eagle was declared recovered, and removed (de-listed) from the Federal List of Threatened and Endangered wildlife. This delisting took effect August 8, 2007. After delisting, the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668-668d) became the primary law protecting bald eagles. Surveys conducted in 2011 concluded that the proposed project will have no impact on the bald eagle due to the absence of nest sites, communal roost sites, or foraging areas for this species (FEIS, p. 4-56).

Cultural Resources

During NEPA documentation, it was determined that no properties listed in or eligible for listing in the National Register of Historic Places (NRHP) will be impacted by the Selected Alternative (ROD, p. 7; FEIS, p. 4-18). Project commitments have been generated to ensure that Site 31CV302, an archaeological site recommended eligible for the NRHP per Criterion D, is avoided and protected throughout the duration of the project's construction (ROD, Appendix C [Sheets 2 & 3 of 7]).

Indirect and Cumulative Effects

Potential indirect and cumulative effects (ICE) attributable to the Havelock Bypass project were analyzed in the FEIS, and summarized in Chapter 4.16.2. Generally, effects to human and natural resources were

found to be minimal or insignificant. Project commitments were developed to help offset the few indirect effects that the USFS wanted addressed. These included:

- Periodic closure of the bypass to facilitate prescribed burns on NFS lands;
- Identification, propagation, and protection of rare plant species;
- Herbicide use specifications for right-of-way (ROW) maintenance;
- Non-native invasive plant species management; and,
- Transfer of the CWMB to the USFS.

A 2008 ICE report was updated in 2011. The results of these reports and NCDOT's ICE screening tool indicated that construction of the Havelock Bypass could potentially induce development in the project study area. A Future Land Use Scenario Assessment (2013) compared Build and No-Build future land use for 2030. The assessment indicated that increased development may occur due to the bypass, particularly in the vicinity of the two interchanges and at the northern and southern termini of the project.

Subsequently, an Indirect and Cumulative Impacts (ICI) water quality modeling analysis (2013) modeled the project's potential indirect and cumulative impacts on water resources. The focus of the analysis was on the potential increases in stormwater runoff and non-point source loads of nitrogen, phosphorus, sediment, and fecal coliform resulting from the future land use scenarios developed for the bypass. A particular focus in the analysis was the potential increase in predicted pollutant loads to Slocum Creek, Sassafras Branch, Cherry Branch, and segments of the Neuse River Estuary which have been designated as impaired by the NC Department of Environment and Natural Resources (NCDENR, now NCDEQ) Division of Water Resources (DWR). While development in the area will result in increases in pollutant loads to impaired waterbodies, the increases suggested by the modeling analysis show comparatively little increase in the Build scenario results over the No-Build scenario. The modeling analysis is discussed in Chapters 4.16.3 through 4.16.8 of the FEIS.

No significant indirect or cumulative impacts to water quality are anticipated due to the construction of the Havelock Bypass project.

Other Permits

In addition to the DCM Consistency Determination, permits to be obtained for this project include an Individual Section 404 permit and an Individual Section 401 Water Quality Certification.

Division of Coastal Management (DCM) General Policy Guidelines for the Coastal Area

The general policy guidelines in 15A NCAC 07M have been reviewed for applicability to this project in its entirety. Explicitly, the .0700 rules (mitigation), and the .0800 rules (water quality) were reviewed. This project will not affect shoreline erosion or shoreline access. However, this project will require compensatory mitigation and impact water quality. This project has been designed to avoid and minimize jurisdictional areas to the largest extent possible. Best Management Practices will be in place during construction; compensatory mitigation will be provided through NCDMS.

CAMA Land Use Plans

Craven County participates in the cooperative state-local North Carolina Coastal Area Management Act (CAMA) program. CAMA requires local governments within the 20 coastal counties to prepare land use plans that provide a balance of protection, preservation, and orderly development.

The project was reviewed for consistency with applicable CAMA land use plans, including the Craven

County CAMA Core Land Use Plan (Holland Planning Consultants, 2009) and the City of Havelock 2030 Comprehensive Plan (City of Havelock, 2009). The county and city land use plans support the construction of a US 70 Bypass along the western edge of the City of Havelock and consider the probable effects of the bypass in the plans. The proposed project is consistent with the Craven County CAMA Core Land Use Plan, which identifies the project as one of a number of transportation projects to improve safety and access in the county. The proposed bypass is also included in the City of Havelock's 2030 Comprehensive Plan. The City has been involved in the project's planning for many years (FEIS, pp. 4-1-4-2). This consistency review indicates that the preferred alternative does not conflict with the goals set forth in the afore-mentioned land use plans and that the City of Havelock land use plan is most supportive of the preferred alternative (Alternative 3).

After reviewing the various policy statements, NCDOT concludes that this project is consistent with the relevant *CAMA Land Use Plans*.

FINAL MINUTES OF INTERAGENCY 4B MEETING

PROJECT R-1015 (HAVELOCK BYPASS)

August 20, 2014

Team Members: See attached

Participants: See attached

R-1015

NCDOT Hydraulics began the meeting at 2:45 p.m. following the Avoidance and Minimization (4A) meeting. The first issues addressed were the changes that have occurred since the previous 4B Meeting on June 20, 2002 followed by a general discussion of the project. These issues include the following:

- The project is now labeled R-1015 and includes the previous separate projects R-1015A and R-1015B.
- The project has been converted from metric to English.
- The typical section now includes a 46' median and 10' paved outside shoulders.
- The culvert at Tucker Creek is now extended both up and downstream. Previously the extension was only on the upstream side. This may be an area of environmental concern (AEC) with CAMA. DCM will further investigate.
- Wetlands and streams have been re-verified in 2013, and the wet file has been updated. (See CCP 4A meeting minutes.)
- There have been several changes in personnel with the team members since 2002.
- The project is still mostly on fill except for the tie-ins at both ends of the project.
- In 2002, USACE noted that as long as new roadway ditches are at the same elevation as the existing roadway ditches that no additional impacts would need to be considered to the wetlands adjacent to the new ditch. This is still the case.
- In 2002, CAMA wanted equalizer pipes buried 1'. This is no longer the case. Now the pipes will not be buried 1'.
- In 2002, it was noted that it is acceptable to place 2GI's (median drainage inlets) on equalizer pipes. It is still acceptable, as long as the boxes are not very deep and the cross pipe is not that large.
- Bridge deck drains are not discharging directly over surface waters.
- There will be further discussions to see if impacts with detours on –Y3- and –Y4- are permanent or temporary.
- Temporary work bridges will be used during construction of both bridges and need to be noted on permit drawings.
- Hydraulic Design is complete. Bridge and Culvert Reports are complete and are included with the 4B packet.
- Southwest Prong of Slocum Creek and Tucker Creek both have "in-water" moratoriums according to DEIS.
- Note that the wetlands extend beyond the right-of-way line, but the wetlands were clipped at the right-of-way line in these drawings.

With no further comments or discussion, NCDOT proceeded to discuss the project sheet by sheet. Attached to these minutes are pdf files with suggested revisions to the drainage plans.

Plan Sheets

Only sheets with comments are noted below.

Sheet 4

The existing pipes will be extended at the beginning (-L- Sta. 33+00 +/-) of the project. This is non-jurisdictional stream.

Sheet 7

EPA suggested using the teardrop-shaped area inside the loop as treatment for the stormwater if the area would be a total take. The feasibility was discussed. The team decided to keep this area as is, and it would not be a total take for the permit drawings. Clearing limits will be 10' beyond the slope stake line. The team mentioned that any small wetland less than ¼ acre would be considered a total take. The team concurred that equalizer pipes used on this project do not need their inverts buried 1 foot.

Sheet 10

Add equalizer pipe in vicinity of wetland around Station 130+00 –L- per USACE recommendation.

Sheet 12

Add equalizer pipe in vicinity of wetland around Station 158+50 –L- and Station 161+50 –L- per USACE recommendation.

Fix property owner name to say "United States Department of Agriculture" for Croatan National Forest (CNF) property per USFS.

Sheet 13

The proposed bridge (total length=1620' with 12 spans at 135' on 72" pre-stressed concrete modified bulb tees) at East Prong of Slocum Creek (Jurisdictional Stream 'S1') was discussed. DWR suggested using rip rap pads to prevent erosion in the vicinity of deck drains. The vertical clearance on this bridge ranges from 6' to 18'. There will be further discussions with Division to see if some rip rap pads are warranted to disperse the flow. There were similar deck drain situations on the Washington Bypass. The bridge over East Prong of Slocum Creek will require a temporary work bridge.

Sheet 14

Account for rip rap pads in permit drawings.

Sheet 15

Move equalizer pipe from Sta. 210+00 –L- to Sta. 208+50 –L-.

Sheet 17

-Y3- Detour impacts will be considered temporary impacts. DWR suggested showing anything inside the temporary slope stakes as temporary impacts. If re-vegetation does not occur, then it will be considered permanent impacts. DCM suggested putting in geotextile fabric under temporary impacts. The stream shown on Sheet 17 is Jurisdictional Stream 'S6'. It was also suggested by the team to use enlargements where necessary.

Sheet 18

Jurisdictional stream ('S9') is shown at the end of driveway around Station 267+00 –L- (Lt). No impacts are indicated at this location.

Sheet 19

Jurisdictional Stream ('S9') will be impacted. There will be stream and buffer impacts at this location. If there is fill outside the R/W, an easement will be required. This stream was not on previous wetland files.

Sheet 20

Southwest Prong of Slocum Creek (Jurisdictional Stream 'S10') will have buffer impacts due to interior bents located in the buffer zone. There will also be temporary impacts due to the work bridge at this location. The proposed bridge will have a total length of 945' and will use 72" modified bulb tees (7 spans at 135'). There will be easements added in the vicinity of the fill slopes near the bridge. Deck drains at this location will be discussed with DCM, Area Bridge Engineer and Division personnel.

Sheet 21

Angle the cross pipe in the vicinity of Station 310+00-L- to match wetland angle.

Sheet 22

Wetland on this sheet will be a total take.

Sheet 23

An easement may be required alongside the proposed ditch. The proposed ditch should match the invert of the existing wetland. May add note, "Do not cut below wetland elevation" at this location. This wetland will be a total take.

Sheet 24

The beginning of this sheet (Station 338+00 –L-) is the beginning of the RCW habitat. The right of way is reduced from 250' to 200' for the next several sheets. There are some easements in this stretch of the project. USFWS indicated that small deviations from the 200' requirement would be ok as long as the majority of the project in this area is within 200'. The old recovery plan that used 200' is being updated and the new distance will be greater than 200'. The update will not take place any time soon. NCDOT Hydraulics may change the cross pipe at Station 342+50 –L- to go diagonally across –L- to reduce

footprint. Per Division, this project will use Method 3 clearing. Label easements as temporary or permanent.

Sheet 25/26

Label easements as temporary or permanent. Easements shown are temporary construction easements.

Sheet 27

At Station 393+00 –L- is the end of the RCW habitat. Right of way limits goes from 200' to 250' here.
Add equalizer pipe near Station 393+75 –L- (near the right edge of the sheet).

Sheet 32

Verify the cross pipe around Station 459+00 –L- is not for a jurisdictional stream.
Add equalizer pipe at Station 463+50 –L-.

Sheet 33

NCDOT will verify if toe protection can be removed near Station 470+60 –L-.

Sheet 34

Remove pipe at Station 487+00 –L-. The team agreed that is was ok to have 2GIs in median on cross pipes as long as the pipe is not very large and the cross pipe is not very deep.

Sheet 36

Verify fill slope lines around bridges (including bridges that cross railroads). There is a proposed culvert at UT to Tucker Creek (double 10'x8' RCBC). Fix label inside culvert report on plan view. This is a Jurisdictional Stream (S22/S23). Show Buffer Zones.

Sheet 41

Rip rap was added near the Havelock City Limit to prevent headcutting near the channel. This is not a Jurisdictional Stream.

Sheet 44

-Y3- detour impacts will be temporary wetland impacts.

Sheet 45

If the pond is a JS (S20b), there should be buffer zone lines around the entire pond. Upstream is JS (S20a).

Sheet 46

Double 72" pipes are located at JS (S19b and S19a). Show Buffer Zones lines correctly.

Sheet 47/48

Tucker Creek is Jurisdictional (S30a/S30b). Show Buffer Zones. The proposed culvert extension (3@ 9'x7' RCBC) is both upstream and downstream. Originally there was an extension only on the upstream side. There is no low flow barrel. Normal water depth is approximately 5'. This may be an area of environmental concern/ public trust area. This finding may trigger a CAMA permit. DCM will make a determination at this site.

End of sheet discussion.

NCDOT showed the team some GIS layers that could be made available if the team would like them. These layers show the project location, design, and impacts. This is not an official product that NCDOT produces. The team would like to have this information if available. NCDOT asked the team to provide feedback on this information as well as other ways to improve the effectiveness of the meetings and the review process.

The meeting adjourned at 5:00 p.m.

Addendum:

See DCM response in attached email (No CAMA permit required; concurrence needed)

Morgan, Stephen R

Subject: R-1015; CP-4A & CP-4B meeting; Division 2 - Craven County
Location: DOT Structure Design Conf Rm C (Cap.40)

Start: Wed 8/20/2014 1:00 PM
End: Wed 8/20/2014 5:00 PM

Recurrence: (none)

Meeting Status: Accepted

Organizer: DOT PDEA INTERAGENCY MEETING CALENDAR
Required Attendees: Devens, Thomas E; Ron.Lucas@dot.gov; Tom Steffens; Gary Jordan; Travis Wilson; David Wainwright; Fritz Rohde; 'kcompton@fs.fed.us'; Gledhill-earley, Renee; 'jessi.baker@ncdenr.gov'; Steve Sollod ; Speer, James A; Mumford, Glenn W; Rouse, John W; Eatmon, Bryce E; Morgan, Stephen R; Billings, Amy A; Ford, Tris B; Beauregard, Rachelle; Cashin, Gordon E; Frazer, Mary E; Parker, Cyrus F; Fischer, Kevin; Stutts, David S; Cox, Hardee R; Hanson, Robert P; Yamamoto, Brian F; James, Larry M; 'paul.koch@stantec.com'; 'amy.sackaroff@stantec.com'; Van Der Wiele, Cynthia (VanDerWiele.Cynthia@epa.gov); 'pflanagan@eccog.org'; Chris Militscher; Stephen Lane; Bousquet, Corey D; Harris, David B; DOT IT Meet Me Conf 919-662-4553
Optional Attendees: Chapman, Amy; 'Clarence Coleman'; George Hoops; Henry Wicker; Thomas P. Wilber; Walter, Tracy A; Barbour, Deborah M; Barbour, Victor; Bourne, John S; Childrey, Tom; Cook, Alena R; Dunlop, James H; Fuller, Gregory A; Griffin, Randy W; Hancock, Richard W; Harris, Philip S; Ishak, Doumit Y; Ishak, Joseph; Johnson, Benjetta L; Joyner, Drew; Kite, Steve; Kuse, Jessica D; Lee, Donald G; Marshall, Travis K; Mathis, Stonewall D; Mcintyre, Ray; Medlin, Kenneth N; Memory, John R; Murphy, Brian G; Murphy, Christie; Paugh, Leilani Y; Pilipchuk, John L; Rivenbark, Chris; Rochelle, Rodger D; Ronnie Smith; Staley, Mark K; Thomas, Earlene W; Twisdale, John W; Alexander, Pamela L; Evans, Cheryl L; Boyd, David A; Kim, K J; Hauser, James W; Mellor, Colin

Please note the meeting start and end times have been modified.

Meeting time is subject to change until 2 weeks before meeting day.
Entire agenda can be found at our new web location:
https://connect.ncdot.gov/resources/Environmental/Pages/Merger-Process-Guide.aspx

Meeting material is available online at:
http://207.4.62.65/PDEA/MergerMeetings/08202014_R1015_CP4A_CP4B/

Time: 1:00pm-5:00pm	Requestor: Ted Devens	STIP No. R-1015: US70 – Havelock Bypass from north of Pine Grove to north of the Carteret County line Division 2 County: Craven Purpose: CP-4A & CP-4B
TEAM MEMBERS:		

FHWA – Ron Lucas	EPA – Cynthia Van Der Wiele
USACE – Tom Steffens	EPA – Chris Militscher
USFWS – Gary Jordan	RPO – Patrick Flanagan (Down East)
NCWRC – Travis Wilson	SHPO – Renee Gledhill-Early
DWR – David Wainwright	DMF – Jessi O'Neal Baker
NMF – Fritz Rohde	DCM – Steve Sollod
USFS – Karen Compton	DCM – Stephen Lane
SUPPORT STAFF:	
Roadway – Jim Speer	Structures – Kevin Fischer
Roadway – Glenn Mumford	Structures – David Stutts
Division – John Rouse	TIP – Hardee Cox
Division – Ed Eatman	PDEA – Rob Hanson
Hydraulics – Stephen Morgan	PDEA – Brian Yamamoto
Hydraulics – Amy Billings	PDEA – Ted Devens
HES – Tris Ford	Geoenvironmental – Cyrus Parker
NES - Rachelle Beauregard	Utilities – Larry James, Jr.
NES – Chris Rivenbark	Utilities – Corey Bousquet
NES – Gordon Cashin	Consultant – Paul Koch, Stantec
NES – Mary Frazer	Consultant – Amy Sackaroff, Stantec
Roadside – Mark Staley	Consultant – Joseph Carter, III
Roadside – David Harris	

Join online meeting

https://meet.ncdot.gov/twalter/RK3Y84Z0

First online meeting?

Call-in number (919) 662-4553

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R-1015
HAVELOCK BYPASS
MERGER PROCESS 4b MEETING
WEDNESDAY AUGUST 20, 2014

Sign in Sheet

NAME	ORGANIZATION	PHONE NUMBER
Brian Yamamoto	NCDOT- PDEA	919-707-6000
Ron Lucas	FHWA	919 747-7019
Steve Sollod	NC DCM	919-707-9152
David Wainwright	NCDWR	919-707-8787
Travis Wilson	NCWRC	919-707-0370
Ed Eatmon	NCDOT- DIV. 2	252-439-2812
Stephen Lane	NCDCM	252-808-2808
Jim Hauser	NCDOT-NES	919-707-6125
Gordon Cashin	NCDOT- NES	919-707-6107
Colin Mellor	NCDOT- NES	919 707-6139
Matt Smith	ESI	910-520-0784
Rob Hanson	NCDOT- PDEA unit	919-707-6024
Chris Rivenbark	NCDOT- PDEA NES	919 707 6152
M. C. Shaldi	NCDOT- Hyd.	919-707-6777
Amy Billings	NCDOT- Hydro	707-6709
Stephen Morgan	NCDOT- Hydro	707-6739
Brian Radakovic	NCDOT- Hydro	707-6747
TED PEVENS	NCDOT- PDEA	707-6018
Amy Sackaroff	Stantec	919 851 6866
Paul Koch	Stantec	919 865-7394
Mark Staley	NCDOT-REU	919-707-2948
James Speer	NCDOT - Roadway Design	919-707-6320
Allison K. White	" Roadway Design	919-707-6341
David Stutts	NCDOT- Structures	919 707-6442
CYNTHIA VANDERWIELE	USEPA	919.450.6811
Karen Compton	USFS	828-257-4230
Gary Jordan	USFWS	919-856-4520 x.32
TOM STEFFENS	USACE	910-251-4615

From:	Sollod, Steve
To:	Morgan, Stephen R; Devens, Thomas E; Ron.Lucas@dot.gov; Tom Steffens; Gary Jordan; Wilson, Travis W.; Wainwright, David; Fritz Rohde; "kcompton@fs.fed.us"; Gledhill-earley, Renee; Baker, Jessi E; Speer, James A; Mumford, Glenn W; Rouse, John W; Eatmon, Bryce E; Billings, Amy A; Ford, Tris B; Beauregard, Rachelle; Cashin, Gordon E; Frazer, Mary E; Parker, Cyrus F; Fischer, Kevin; Stutts, David S; Cox, Hardee R; Hanson, Robert P; Yamamoto, Brian F; James, Larry M; "paul.koch@stantec.com"; "amy.sackaroff@stantec.com"; Van Der Wiele, Cynthia (VanDerWiele.Cynthia@epa.gov); "pflanagan@eccog.org"; Chris Militscher; Lane, Stephen; Bousquet, Corey D; Harris, David B; Patel, Janaki H; Radakovic, Brian M
Cc:	Billings, Amy A
Subject:	RE: R-1015 - Craven County; CP-4B draft meeting minutes from August 20, 2014
Date:	Tuesday, September 09, 2014 11:10:14 AM

The draft minutes of the 8/20/14 Havelock Bypass 4B meeting state the following:

- The culvert at Tucker Creek is now extended both up and downstream. Previously the extension was only on the upstream side. This may be an area of environmental concern (AEC) with CAMA. DCM will further investigate.

DCM has determined by field verification that Tucker Creek is not navigable for a considerable distance downstream of US 70 and is not considered a CAMA Area of Environmental Concern (AEC) in the area of the proposed culvert work. Therefore, the Havelock Bypass (R-1015) will not require a CAMA Permit. However, the issuance of a USACE Individual Permit for a project located in one of the 20 coastal counties that make up the coastal zone requires that the applicant certify, and DCM to concur with the certification, that the project is consistent with the NC coastal management program.

Please make a note of this in the final meeting minutes.

Thanks,

Steve

From: Morgan, Stephen R
Sent: Monday, September 08, 2014 8:05 AM
To: Devens, Thomas E; Ron.Lucas@dot.gov; Tom Steffens; Gary Jordan; Wilson, Travis W.; Wainwright, David; Fritz Rohde; 'kcompton@fs.fed.us'; Gledhill-earley, Renee; Baker, Jessi E; Sollod, Steve; Speer, James A; Mumford, Glenn W; Rouse, John W; Eatmon, Bryce E; Billings, Amy A; Ford, Tris B; Beauregard, Rachelle; Cashin, Gordon E; Frazer, Mary E; Parker, Cyrus F; Fischer, Kevin; Stutts, David S; Cox, Hardee R; Hanson, Robert P; Yamamoto, Brian F; James, Larry M; 'paul.koch@stantec.com'; 'amy.sackaroff@stantec.com'; Van Der Wiele, Cynthia (VanDerWiele.Cynthia@epa.gov); 'pflanagan@eccog.org'; Chris Militscher; Lane, Stephen; Bousquet, Corey D; Harris, David B; Patel, Janaki H; Radakovic, Brian M
Cc: Billings, Amy A
Subject: RE: R-1015 - Craven County; CP-4B draft meeting minutes from August 20, 2014

Please respond with any comments in two weeks- by September 19, 2014.

Thanks

Draft meeting minutes can be found at:

http://207.4.62.65/PDEA/MergerMeetings/08202014_R1015_CP4A_CP4B/

Let me or Amy Billings know if you have any corrections or additional comments.

Thanks,

Stephen

Stephen R. Morgan PE

NCDOT Hydraulics Unit

Project Engineer

Western Region (TIP)

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

June 12, 2018

To:
Ron Lucas
Travis Wilson
Thomas Steffens
Chris Militscher
Gary Jordan
Garcy Ward
Curtis Weychert
Ken Riley
Fritz Rohde
Gary Lovering
Kevin Fischer
Maria Rogerson
Bo Hemphill
Chris Rivenbark
Mark Staley
David Harris

From: Paul Atkinson, PE
Project Manager – TIP East

Subject: **Minutes of the Interagency Hydraulic Design Review "4C" Meeting for R-1015**: US 70 (Havelock Bypass) from South of Carteret/Craven County Line to South of SR 1176 (Carolina Pines Blvd.) Craven County

The "4C" Meeting for R-1015 was held on April 19, 2018 at 1:00 PM in the NCDOT Structures Design Conference Room, at the Century Center Complex in Raleigh, NC. The following were in attendance:

Participants:

Team Members
Ron Lucas, FHWA (Absent)
Travis Wilson, NCWRC (Absent)
Thomas Steffens, USACE (Absent)
Chris Militscher, USEPA (Absent)
Gary Jordan, USFWS (Absent)
Garcy Ward, DWR (Present)
Curtis Weychert, NCDCM (Absent)
Ken Riley, NMFS (Absent)
Fritz Rohde, NMFS (Absent)
Stephen Lane, NCDCM (Present)
Cathy Brittingham, NCDCM (Present)
Monte Mathews, USACE (Present)

Support Staff
Gary Lovering, NCDOT Roadway (Present)
Kevin Fischer, NCDOT Structures (Absent)
Maria Rogerson, NCDOT Division 2 (Absent)
Bo Hemphill, NCDOT Utilities (Absent)
Chris Rivenbark, NCDOT NES (Present)
Mark Staley, NCDOT Roadside (Present)
David Harris, NCDOT REU (Absent)

Other Attendees
Matt Smith, ESI
Gordon Cashin, NCDOT EAU
Colin Mellor, NCDOT EAU
Hoang Dieu, NCDOT Structures
John Conforti, NCDOT PMU
Brook Anderson, NCDOT Hydraulics
Erik Seiler, NCDOT Hydraulics
Michelle Berry, NCDOT Hydraulics

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Location:
1020 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

The 4C meeting began with Brook Anderson (NCDOT) giving a brief overview of the project and stating she would go through the Wetland and Surface Water Impacts Permit Drawings then Buffer Impacts Permit Drawings. Brook also stated she would skip over the cross section and profile sheets unless there were specific comments or questions. It was noted the current letting date for the project is February 19, 2019.

Wetland Impacts Permit

Cathy Brittingham asked if there had been changes to the horizontal and vertical alignments since the 4B meeting. Brook Anderson responded that the horizontal alignment has stayed the same but there had been some changes with the vertical alignment with the locations of some crest and sags throughout the project.

Tom Steffens was not in attendance for the 4C meeting but submitted comments prior to. Those comments were read during the meeting and addressed at each corresponding site. Tom Steffens also asked for additional cross sections at certain locations along the project. The Hydraulics Unit will add the corresponding cross sections to the final permit package.

Stormwater Management Plan and Title Sheet
No Comments.

Sheets 2& 3:

No Comments.

Sheets 4&5:

No Comments.

Sheets 7 & 8:

Tom Steffens stated that excavation and relocation of drainage should not exceed the depth of existing drainage. He also asked to verify the drainage break in flow direction for the ditch at approximate station 75+00 (RT) –L-. Brook Anderson responded that the existing ditch has high and low spots throughout its length and the proposed ditch will match the existing elevations as close as possible while maintaining a continuous grade. She also stated that there may be some locations where it appears the ditch is cutting slightly deeper or there is a slight raise from the existing but this is due to the variability in the high and low spots mentioned previously. Brook Anderson then stated that the break in ditch direction at approximate station 75+00 (RT) –L- was verified as the highest elevation in the existing ditch and the proposed ditch crest matches existing drainage patterns.

Sheets 10&11:

Tom Steffens asked what the function of the Special Cut Ditch with Earthen Berm (Detail C) was, and said it appears that a lot of storage is being displaced by fill and water is being directed in the cloverleaf area of the interchange. He also asked for clarification of where and in what direction the bulk of the water will equalize (to the north along existing US70 or more south?). Brook Anderson responded that Detail C replaces an existing berm that is being removed due to the widening of US 70 and the berm functions as a barrier separating offsite drainage from US 70 roadway drainage. The proposed earthen berm is used to match existing flow patterns as closely as possible. She also explained that the general direction of the water is from north to south, and the

water will ultimately move through the equalizer pipes at the top of the cloverleaf and spread out south of the interchange, matching existing drainage patterns.

Sheets 12&13:

No Comments

Sheets 15&16:

No Comments

Sheets 17&18:

Stephen Lane asked about the placement of the equalizer pipe. He said that the inlet and outlet of the pipe appear to be at the edges of the wetland boundary. Brook Anderson responded that the equalizer pipe was placed in the general low spots of the wetland, which happens to be at the edges of the wetland boundary.

Stephen Lane asked about the proposed channel under the bridge next to the railroad. Brook Anderson responded that the proposed channel was due to a proposed bridge bent being located in the existing channel, so the channel was realigned to go around the bent and riprap was placed in the channel for stability. Brook Anderson also stated that there are no deck drains on the bridge.

Sheets 22&23:

Tom Steffens asked about the cross pipe at Site 7, -L- station 155+00 -, it appears to be curved. Brook Anderson responded that it just appears to look like that way on the printed plans. She stated that there is a 2GI in the median with a slight bend between the pipe segments, making the pipe appear curved on the plans.

Sheets 26&27:

No Comments

Sheets 30&31:

Brook Anderson stated that there are deck drains on the bridge but they are omitted from inside the buffers and discharge outside of zone 2.

Sheets 33&34:

No Comments

Sheets 35&36:

No Comments

Sheets 38&39:

Tom Steffens asked if the soil road access had been resolved. He stated that earlier crossings had access provided off the -L- alignment. Brook Anderson stated that she looked back at the 4B set of plans and did not see access provided at this location. Brook Anderson also stated that to her knowledge, all access issues have been resolved for the project.

Tom Steffens asked why there is toe protection provided on the east side but not the west. Brook Anderson responded that toe protection is generally only placed when required to protect the fill slope due to topography, volume of water directed towards the fill slope and velocities along the fill slope. It was determined that the east side warranted the protection and the west side did not. She also stated that toe protection allows us to avoid placing a ditch to protect the fill slope. Stephen Lane then stated that the detail shows the riprap for the toe protection extending five feet past the toe of fill and asked if it could be pulled back to the toe of slope. He stated that he has seen it done this way in the field before. Brook Anderson responded that it would be looked into. *After followup with Division, Hydraulics agrees to look at toe protection areas in wetlands and decrease the width of rip rap along the toe to 2', rather than 5', where feasible based on flow conditions.*

Tom Steffens stated that there is an equalizer pipe that appears to terminate into the embankment of the soil road turnout at -L- station 218+50 (LT). He also asked if one equalizer pipe was adequate for this area. Brook Anderson responded that the equalizer pipe is terminating into the ditch line that goes around the soil road and not the embankment. She also stated that there are two equalizer pipes at this site, one in each existing ditch along both sides of the existing drive, maintaining existing flow patterns. Since the water is currently draining towards these ditches, additional pipes in the wetland area outside of the ditch lines weren't warranted.

Sheets 44-46, 48, 50, 60-63:

Stephen Lane asked to have the middle of the interchange explained, where the bridge on the -Y- line crosses over the -L- and two cross pipes meet at the JS stream. The grade separation bridge carries the –Y3- traffic over the –L- alignment. The 72" pipe carries the flow from the jurisdictional stream from one side of –L- to the other and the 36" pipe carries flow from the wetlands in quadrant C of the interchange under the –Y- line.

Tom Steffens asked for the construction sequence of the interchange area to be explained and also to describe where the water is transitioning from Sites 13-15 through quadrants B and C. Brook Anderson responded by explaining that the –Y3- detour will be constructed and –Y3- traffic will be shifted onto it so –Y3- and the bridge can be constructed. After traffic has been shifted back onto the newly constructed –Y3-, the detour will be removed. Construction of the –L- alignment and ramps may occur before and during the construction of –Y3-, with final tie-ins to occur after –Y3- is complete. Brook Anderson explained water was generally moving south to north in this area. The main concentrated flow in this area is carried in the jurisdictional stream and equalizer pipes are placed throughout the ramps in the low lying areas to allow water to equalize and follow existing drainage patterns. There is some existing high ground between sites 13 and 14 so that flow west of the high ground is generally moving towards the jurisdictional stream and then flowing north in the stream. Flow east of this high ground moves from Site 13 towards Site 20. This flow is then conveyed by pipe under the –Y- alignment and then west in a ditch along the north side of the –Y3- alignment to the jurisdictional stream at Site 17.

Tom Steffens asked if the riprap in the stream at Site 17A is temporary or permanent and stated that the riprap must be kept at or below the substrate elevation. Brook Anderson responded that the riprap at 17A is for the temporary 60in pipe under the -Y3- detour road and the riprap is a temporary impact. She also stated that the riprap is supposed to be placed flush with the stream bed elevation. *Following the 4C meeting, after considering comments we have received concerning the placement of rip rap in stream beds not being installed flush with the channel bed and given the environmentally sensitive area of this project, they Hydraulics Unit will add a note or detail for the rip rap in jurisdictional stream beds, throughout the project, to indicate that it should be installed flush with the channel bed.*

Garcy Ward asked about the two cross pipes at Site 17 meeting at the JS Stream. Brook Anderson responded that the JS stream is a sizeable channel and riprap on the banks has been called for to stabilize the channel. She also stated that the velocities coming out of the pipes are generally low and riprap in the bed of the channel is not warranted. Garcy Ward stated that looking throughout the plans he noticed riprap in the channel beds, which is preferred if it is needed. Brook Anderson responded that riprap in the channel beds was avoided as much as possible but if the velocities warranted it, riprap was called for.

Garcy Ward asked if backfilling pipes was discussed. Brook Anderson responded that pipes are buried one foot in the JS streams. Garcy Ward asked if the pipes that are called to be buried one foot, are actually backfilled. Brook Anderson responded that generally backfilling would only be specified for larger box culverts but circular pipes are generally placed one foot below the natural stream elevation and allowed to naturally fill in after construction. Garcy Ward stated that pipes large enough to reasonably backfilled (such as a 72 inch or larger), in his experience in the field, have worked well in preventing head cutting issues by getting the native material in the pipe right after placement rather than waiting for the stream to naturally do it. Brook Anderson stated that she would look into this by contacting the Division Construction office to see if this is something they can do and would respond in the meeting minutes with an answer. *After follow up with Division, Division requests not to have to backfill the pipes. Hydraulics concurs for this project, backfill is not necessary. The pipes are low slope and don't have sills which would prevent them from filling in naturally. During field review, no evidence of head cut issues were seen in existing channels and streams and most existing pipes were significantly silted in so we would expect proposed pipes to perform similarly.*

Tom Steffens asked if the wetlands between Sites 21A and 18A are being filled in. Brook Anderson responded that they are. Sheets, 61, 62, and 63 show the temporary detour and additional impacts due to the detour. The permanent impacts for this area are shown on Sheets 44 & 45. Brook Anderson then went on to clarify how the permanent and temporary impacts were generally accounted for. She said first all impacts associated with the permanent foot print of the project were drawn, then any additional impacts needed due to the temporary detour were added outside of the permanent impacts as temporary impacts (temporary fill and hand clearing). Currently, both permanent and temporary impacts are shown on the plan sheets that display the permanent roadway and only temporary impacts are shown on the detour sheets. Brook Anderson stated that it is confusing, but felt that this was the clearest way to present the drawings and she is open to any suggestions to make it clearer.

Cathy Brittingham asked how long the detour will be in place. Gary Lovering responded approximately 12 to 18 months.

Monte Mathews asked what sheet the temporary detour is shown on. Brook Anderson responded sheets 60-63 for this interchange.

Tom Steffens asked about headwalls on the outlet of the pipes at Site 17. Brook Anderson responded that generally headwalls are used on the inlet end and not used on the outlet end.

Sheets 65&66

No Comments

Sheets 67&68

Tom Steffens asked for the drainage at Site 22 to be explained. Brook Anderson explained that the proposed channel on the west side of the -L- alignment is flowing south to the 24in RCP which

intersects the 84in cross pipe. She stated that this 24in pipe will mainly flow in lower flow conditions and during higher flows the water in the channel will overtop the drainage divide and continue to the JS stream. The 84in RCP carries the flow from the JS stream which flows from the top of the page to the bottom. Brook Anderson stated that the 30in RCP cross pipe just north of the 84in is flowing from the top of the page to the bottom as well and it functions as a supplemental pipe during high flow events to convey drainage from the west side –L- to the east side.

Tom Steffens asked about headwalls at the ends of the pipes. Brook Anderson responded that generally only inlets of pipes get headwalls.

Tom Steffens stated that the riprap at the end of the 84in RCP needs to be placed at or below the substrate elevation of the channel. Brook Anderson responded that it will.

Tom Steffens asked about the large red triangle in the enlargement for Site 22. Brook Anderson responded that it is a right-of-way marker and it should be printed black. She stated it will be fixed for the final permit package.

Sheets 71&72

Brook Anderson stated that the drainage structures had inadvertently been turned off on PSH 20 of the package. A new copy of sheets 71 and 72 were distributed to meeting attendees. Tom Steffens had asked where the drainage from the bridge was being discharged? Brook stated that the new sheet shows 2GIs at the ends of the bridge which will collect the bridge drainage and discharge it outside of buffers and wetlands. Stephen Lane asked if 100% of the water is being captured from the bridge. Brook Anderson stated that there are deck drains on the bridge but they are omitted inside the buffers and over the jurisdictional stream.

Garcy Ward asked what the bridge height is at the point where the deck drains discharge. Brook Anderson responded approximately 15ft or more. Garcy Ward stated that when bridges are low, scour issues caused by the deck drain discharge are a concern. Brook Anderson responded, being that the proposed bridge is 15ft (+), the water leaving the deck drains should be high enough to allow it to dissipate before hitting the ground eliminating scour concern. Meeting attendees were in agreement that dissipator pads under the deck drains would not be required.

Sheets 76&77

Brook Anderson stated that there is a 42in. RCP placed in an existing channel at Site 24 that is not a JS channel.

Sheets 78&79

Tom Steffens asked what the black box was on the plan sheet. Brook Anderson responded that it is coming from the roadway file and will be removed for the final permit package.

Sheets 81&82

Brook Anderson stated that there is a small amount of excavation in wetlands where the ditches meet the proposed 72in RCP cross pipe.

Sheets 85&86

Brook Anderson stated that this area is the habitat for the endangered red-cockaded woodpecker (RCW) and NCDOT had committed to a 200 ft right of way width through the area. She also stated

that this is an area were there may be some changes between now and the final permit package because the DOT is working on minimizing impacts while still maintaining roadway design and safety standards and there is ongoing coordination with Gary Jordan concerning the design in this area.

Sheets 91&92

Brook Anderson stated that this area is still within the RCW area and the DOT is trying to keep everything within the committed 200ft right-of-way limits. She said the PDE shown at the outlet of the 36in pipe, approximate station 356+50 (RT) -L-, is going to be changed to TDE and a note added to the plans to not remove any trees outside of the right of way at this easement.

Brook Anderson stated that the note on the plan sheet that says: "SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR –L- STA.338+00 TO 393+00", refers to DOT's commitment to maintain a 200ft right-of-way in the RCW habitat area.

Sheets 94&95

No Comments

Sheets 97&98

Brook Anderson stated that at Site 32, the right-of-way is shown getting kicked back out and this is due to the end of the RCW area.

Sheets 99&100

Tom Steffens asked for clarification about what the proposed ditch is doing between -L- sta. 400+00 to 405+00 (LT). Brook Anderson explained that the ditch is maintaining connection between two existing ditches which are being covered by the proposed roadway fill. Brook also stated that this area is not located in any JS or wetland area.

Sheets 102&103

No Comments

Sheets 106&107

Tom Steffens asked for the "(UPDATED)" notation at approximate sta. 430+00(LT) and 435+00(RT) -L- to be explained. Brook responded that the note is in roadway's file and she believes it is an internal note to themselves. This note won't be on the final plans or permit drawings.

Tom Steffens asked if there are drop inlets in the median at Site 35A. Brook Anderson said there are some 2GIs in the median to pick up the median drainage but they are spaced fairly far apart. In this vicinity there are median 2GIs at Sta. 420+50, 434+50 and 442+50.

Sheets 108&109

No Comments

Sheets 111&112

Stephen Lane asked about the size of the riprap pads for Site 35A and 35B. Brook Anderson responded that the riprap sizes are drawn to scale in jurisdictional areas and the size of the pad is based on the pipe size. She said on this sheet, one of the pipes is 48in and the other is an 84in.

Sheets 116&162

Tom Steffens asked what the purpose of the toe protection is at -L- sta. 471+00 on both the east and west side. Brook Anderson responded that toe protection was used where conditions warranted based on topography and discharge. She stated that the toe protection would be less of an impact than a proposed ditch.

Stephen Lane clarified his earlier comment about asking if the toe protection can be pulled back to just the toe of fill, stating that it was for the entire project not just that site.

Sheets 118&119

Brook Anderson explained the need for the proposed ditch at the top of the sheet, stating that it was to angle the existing channel away from the toe of slope and toward the 36in cross pipe.

Sheets 121&122

Brook Anderson stated that the 36in cross pipe at Site 38A is not an equalizer pipe. The concentration of flow was large enough to add a riprap pad.

Sheets 124-126

No Comments

Sheets 132&133

No Comments

Sheets 134&135

Garcy Ward asked if the JS stream is buffered. Brook Anderson responded that this is a new site that was recently added. Matt Smith stated he will check to see if it is buffered. Brook stated this site would be added to the buffer drawings if determined to be a buffered stream. *Followup on this item indicates this stream should be buffered. Buffers and appropriate impacts will be added to the final permit drawings.*

Stephen Lane asked if the pipe going across the road is a 24in pipe. Brook responded that the pipe starts as a 24in and ends as a 36in pipe. Stephen lane asked if the pipe warrants a riprap pad. Brook Anderson said yes, generally storm drain systems have higher velocities and we want to protect from scour, especially since this location is next to a private residence.

Sheets 136&137

No Comments

Sheets 138&139

Brook Anderson stated again that the permanent foot print was hatched first and then the detour was brought in and additional impacts due to the detour hatched as temporary, so permanent impacts took priority.

Sheets 140&141

Brook Anderson stated that these sheets are out of order and should come before Sheets 138&139.

Sheets 142&143

Garcy Ward stated that Site 21A is one of the only sites he saw hand clearing. Brook Anderson responded that hand clearing was used under bridges and for clearing associated with the temporary detours. Garcy Ward asked what the offset for mechanized clearing was. Brook Anderson responded 10ft from toe of fill or back of ditch. A discussion followed on hand clearing versus mechanized clearing and the consensus of the room was to continue with permitting as currently shown but it can be further discussed at the Preconstruction Meeting to determine if hand clearing could replace some of the mechanized clearing.

Sheets 144&145

No Comments

Sheets 148&149

There was a discussion about shortening the riprap at the end of the 2@84in RCP buried one foot. The consensus of the room was that it needs to stay as shown on the plans due to the disturbance of the channel's bed from the temporary pipes used during the detour.
Garcy Ward asked that the riprap be placed flush with the bed of the channel. Brook Anderson said that it will.

Sheet 150

No Comments

Sheets 153&154

No Comments

Sheets 155&156

Tom Steffens asked if there was riprap at the outlet of the culvert. Brook Anderson responded, no. Garcy Ward asked if the existing culvert was embedded. Brook Anderson responded no, so the proposed culvert was extended at 0% slope on both ends and was not buried. Garcy Ward asked to make sure the culvert is not perched. Brook Anderson responded that the culvert is not perched and no scour was present, which is why riprap was not called for at the outlet of the culvert.

Sheets 158&159

No Comment

Sheets 160-162

Cathy Brittingham asked if there were utility impacts. Brook Anderson responded that there will be, but the Hydraulics Unit does not account for them in 4C and the Utilities Unit will do their own drawings. Gordon Cashin stated that there will be some from Duke Energy due to the transmission lines. Matt Smith stated that most of the impacts are from shifting the poles back inside their right-of-way.

There was a discussion on the permitting process time frame and Memorandum of Agreements needed.

Garcy Ward asked if any consideration was taken for pipe and culvert dewatering. Brook Anderson responded, yes, enough impacts were shown to account for temporary diversions needed for the installation of pipes. She also stated that the existing locations would require some dewatering, possibly pump arounds, but doesn't know exactly how much or how extensive it will be. Garcy Ward stated his concern is with diversion channels and having to do a permit modification due to impacts not being accounted for. Brook Anderson responded that diversion channels were taken into consideration when counting impacts and most of the culvert installation sites were counted as permanent impacts due to mechanized clearing so that the area could be grubbed to install the channel.

Buffer Impacts Permit

Sheet 2

No Comment

Sheet 3

Garcy Ward stated that the buffer lines on right hand side of page do not appear to follow the JS line. Brook Anderson responded that the buffer lines follow the top of bank break line surveyed by the Location & Surveys Unit.

Garcy Ward asked if there were deck drains on the bridge. Brook Anderson said there were but they were omitted from inside the buffers and discharge only outside of buffer zone 2.

Sheets 4&5

Garcy Ward asked if there will be treatment from the two tail ditches that drain from the median before hitting the buffers. One is located at the edge of Site 3 and the other is just outside of Site 3. Brook Anderson said that both tail ditches are at a 0.0% slope used to get the water to drain from the median and would expect sheet flow before the buffers. She stated that she would check to verify that the velocities are low. *Following the 4C meeting, the velocities were verified to be 1fps before the buffers and sheet flow is expected.*

Sheet 6

Garcy Ward asked why there are no buffers for the JS. Brook Anderson said she was told they were exempt. Matt Smith confirmed that he thought they were exempt too. Garcy Ward responded that usually just man made channels are not buffered. Matt Smith responded that he will check documentation and confirm. Brook Anderson stated that if it

is confirmed a note will be added to the plans stating such. Brook also noted that Locations and Surveys did not show an identifiable stream line in this area.

Sheet 7

Garcy Ward stated that looking at the grass swale data on the plans it looked like it didn't quite meet grass swale criteria. Brook Anderson explained that the majority of the area draining through the swale is from offsite and is getting treatment as it flows to this ditch from the woods, which does not get accounted for. She stated that the impervious area was broken out in the grass swale data to show that there is treatment for the impervious area and for what is coming from the DOT right-of-way.

Sheet 8

Garcy Ward asked if the stream is draining into the pond. Brook Anderson said, yes. Garcy Ward then stated that if the pond is part of the stream drainage, then the buffers need to be extended around the pond. Brook Anderson responded that the drawings will be updated to reflect that.

Sheet 9

Garcy Ward asked when the detour comes out, will there need to be a replanting plan for this area. Mark Staley responded that the standard Erosion and Control Plans have a reforestation plan. Garcy Ward asked to make sure that it gets included in the final buffer package. Brook Anderson responded that it will.

Sheets 10&11

Garcy Ward stated that there is an 18in pipe that is tying into the culvert where the extension is and there is a swale going to the 18in pipe. He said he is assuming that the swale meets the required criteria. Brook Anderson said she will check and add the numbers to the sheet. Garcy Ward then asked if some of the pipe could be eliminated and continue the swale further. Brook Anderson responded that there is a topography issue at this location, and there is no way to get the water down the steep slope without creating an erosion problem. *Further review of this area after the meeting indicates the total drainage area into the culvert from that storm drain system is 5.2 acres with over 1700 ft of treatment in the median ditches which have side slopes ranging from 3:1 to 6:1.*

Sheets 12-14

Brook Anderson stated that both the buffer and wetland/stream impact quantities may be slightly different on the final permit drawings since roadway is still finalizing their plans and models. Their changes at this point are mostly related to precision and plan cleanup but a minor shift in a shoulder points changes the slope stake line and can cause minor differences in the overall impact quantities. She stated that visually it won't be something that will be seen looking at a plan sheet, but there may be some difference in the final quantities.

Brook Anderson also stated that there is a rush on the project with a let date of February 2019 and would like to have a two week turn around on the meeting minute comments.

Monte Mathews stated that they will need 120 days to review the permit. Cathy Brittingham stated she will need approximately 90 days. Brook Anderson said she will try to get the final permit package to Gordon Cashin shortly after sending the final 4C meeting minutes to everyone.

Matt Smith explained that the permits are based off of a WEX file, not an approved WET file for the wetland boundaries. The WEX file extends the boundaries of the wetlands further away from the R/W than the approved WET File. The WEX file includes boundaries from the original 1000ft corridor as seen by the Army Corps previously, but was not approved in the last Jurisdictional Determination (JD). No new wetlands were surveyed for the WEX file. Matt Smith stated that the JD needs to be re-approved because it expires in December 2018 and the WEX data will be in the new JD. Monte Matthews explained that it would be best to submit the JD early, so that the Army Corps could approve it before completing the Permits.

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
TIM BAUMGARTNER
Director

NORTH CAROLINA
Environmental Quality

November 20, 2018

Mr. Philip S. Harris, P.E., CPM
Environmental Analysis Unit
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

Subject: DMS Mitigation Acceptance Letter:

R-1015, US 70 – Havelock Bypass from North of Pine Grove to North of the Carteret County Line 401, Craven County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the stream, wetland and buffer mitigation for the subject project. Based on the information supplied by you on November 20, 2018, the impacts are located in CU 03020204 of the Neuse River basin in the Southern Outer Coastal Plain (SOCP) Eco-Region, and are as follows:

Stream and Wetlands	River Basin	CU Location	Eco-Region	Stream			Wetlands		
				Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh
Impacts	Neuse	03020204	CP	0	0	2,870.0	15.82	98.33	0

*Some of the impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details.

All buffer mitigation requests and approvals are administrated through the Riparian Restoration Buffer Fund. The NCDOT will be responsible to ensure that appropriate compensation for the buffer mitigation will be provided in the agreed upon method of fund transfer. Upon receipt of the NCDWR's Buffer Authorization Certification, DMS will transfer funds from the NCDOT 2984 Fund into the Riparian Restoration Buffer Fund. Upon completion of transfer payment, NCDOT will have completed its riparian buffer mitigation responsibility for TIP Number R-1015. Subsequently, DMS will conduct a review of current NCDOT ILF Program mitigation projects in the river basin to determine if available buffer mitigation credits exist. If there are buffer mitigation credits available, then the Riparian Restoration Buffer Fund will purchase the appropriate amount of buffer mitigation credits from NCDOT ILF Program.

Buffer	River Basin	CU	Eco-Region	Buffer Impacts		
				Zone 1	Zone 2	TOTAL
Impacts	Neuse	03020204	SOCP	47,407.0	37,382.0	84,789.0

DMS commits to implementing sufficient compensatory mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-707-8420.

Sincerely,

Beth Harmon

for James B. Stanfill
DMS Asset Management Supervisor

Cc: Mr. Monte Matthews, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NC Division of Water Resources
File: R-1015

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

General Project Information

WBS Element:	34360.1.2	**TIP Number:**	R-1015	**Project Type:**	New Location	**Date:**	8/1/2018
NCDOT Contact:	Stephen Morgan			**Contractor / Designer:**			
Address:	NCDOT Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699			**Address:**	NCDOT Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699		
Phone:	919-707-6739			**Phone:**			
Email:	smorgan@ncdot.gov			**Email:**			
City/Town:	Havelock			**County(ies):**	Craven		
River Basin(s):	Neuse			**CAMA County?**	Yes		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	10.348 Miles	**Surrounding Land Use:**	National Forest and rural residential

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	ac.	ac.
Typical Cross Section Description:	The main alignment has a typical section of 2, 12' travel lanes in each direction with 6' inside shoulders (4' paved), 12' outside shoulders (10' paved), and a 34' grass median. Median shoulders will be 6' wide with 4' of paved shoulder. See project plans for typicals for other alignments and along existing roadways which vary by location.	Project is primarily along new location but at tie-ins, the existing roadway is generally 2, 12' travel lanes in each direction,with 4' paved shoulders (total pavement width approx. 32' each side), and a 34' grass median. Existing conditions vary by location for -Y- lines and other alignments.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 22900 Year: 2035	Existing: N/A (New Location) Year:

General Project Narrative: (Description of Minimization of Water Quality Impacts)

The proposed project is a multi-lane limited access highway that will bypass the Town of Havelock. The southern terminus is at existing US 70 near the Craven/Carteret County line and the northern terminus is at existing US 70, south of its intersection with SR 1105, approx. 4.5 miles northwest of Havelock. Approx. 8.5 miles will be on a new location with the remainder following existing roads.

This project has storm drain systems that collect road and off-site discharge. Rip Rap pads are used at system outlets for energy dissipation. Existing flow patterns are maintained to the maximum extent practicably and equalizer pipes are used extensively in wetland areas. 3:1 side slopes are used throughout wetland and stream areas to minimize impacts. In the Red-cockaded Woodpecker habitat area, the R/W was reduced to a 200' width in accordance with project commitments. Sheet flow of drainage was maintained when possible. Ditches were used when required to maintain existing drainage patterns, protect the roadway or minimize flooding potential to private properties. Vegetative linings were used in ditches and ditches were designed to grass swale standards when possible. Diffuse flow was maintained through riparian buffers when possible, however, when ditches were required through buffers, discharge was treated using grass swales prior to entering the buffers.

Dual bridges span East Prong of Slocum Creek and Southwest Prong of Slocum Creek at -L- 177+67 and -L- 287+62.5 and their associated riparian buffers. Temporary work bridges will be used to construct the bridges and hand clearing is used under the bridges during construction. Deck drains are omitted over the streams and buffers.

A 2 @ 10' X 8' RCBC will be constructed at the new location crossing of UT to Tucker Cr. at -L- 509+41. The culvert will be embedded 2' below the stream bed to account for the variable nature of the stream bed depth and help ensure the culvert maintains a natural channel material post-construction. An existing 3 @ 9' X 7' RCBC at -RP2AC-44+89 will be extended 24' upstream and 78' downstream. The downstream extension will replace an existing 3 @ 137" X 87" Pipe Arch culvert under the service road. Culverts were designed to maintain existing low flow conditions and velocities to the maximum extent practicable.

Waterbody Information

Surface Water Body (1):	East Prong of Slocum Creek		**NCDWR Stream Index No.:**	27-112-2	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	Swamp Waters (Sw)	(NSW)	
Other Stream Classification:	None				
Impairments:	mercury (Hg)				
Aquatic T&E Species?	No	Comments: FEIS states a moratorium for in-water work from Feb 15 to June 15			
NRTR Stream ID:	S1			**Buffer Rules in Effect:**	Neuse
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	No
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

Additional Waterbody Information

Surface Water Body (2):	UT of Southwest Prong of Slocum Creek		**NCDWR Stream Index No.:**	27-112-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Swamp Waters (Sw)	(NSW)		
Other Stream Classification:	None					
Impairments:	mercury (Hg)					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	S6			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (3):	UT to Southwest Prong of Slocum Creek		**NCDWR Stream Index No.:**	27-112-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)	Swamp Waters (Sw)		
Other Stream Classification:	None					
Impairments:	mercury (Hg)					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	S9			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (4):	Southwest Prong of Slocum Creek		**NCDWR Stream Index No.:**	27-112-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)	Swamp Waters (Sw)		
Other Stream Classification:	None					
Impairments:	mercury (Hg)					
Aquatic T&E Species?	No	Comments:	FEIS states a moratorium for in-water work from Feb 15 to June 15			
NRTR Stream ID:	S10			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (5):	UT to Tucker Creek		**NCDWR Stream Index No.:**	27-112-6		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class SC			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)	Swamp Waters (Sw)		
Other Stream Classification:	None					
Impairments:	mercury (Hg)					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	S22 & S23			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

Additional Waterbody Information

Surface Water Body (6):	UT of Southwest Prong of Slocum Creek		**NCDWR Stream Index No.:**	27-112-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)	Swamp Waters (Sw)		
Other Stream Classification:	None					
Impairments:	mercury (Hg)	None				
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	S7			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (7):	UT of Southwest Prong of Slocum Creek		**NCDWR Stream Index No.:**	27-112-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Swamp Waters (Sw)	(NSW)		
Other Stream Classification:	None					
Impairments:	mercury (Hg)					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	S20a & S20b			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (8):	Tucker Creek		**NCDWR Stream Index No.:**	27-112-6		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class SC			
		Supplemental Classification:	Swamp Waters (Sw)	(NSW)		
Other Stream Classification:	None					
Impairments:	mercury (Hg)					
Aquatic T&E Species?	No	Comments:	FEIS states a moratorium for in-water work from Feb 15 to June 15			
NRTR Stream ID:	S30a, S30b, & S30c			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

WBS Element: 34360.1.2 **TIP No.:** R-1015 **County(ies):** Craven

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
17	-Y3- 52+60 LT 34.86815622/ -76.93609789	(2)UT of Southwest	3.0	3.0	3.0	8.9	890	970	0.34%	39.0	2.1	44.0	2.2	No	No
17	-Y3- 53+57 LT 34.86827619/ -76.93580999	(2)UT of Southwest	3.0	3.0	3.0	13.9	1390	1725	0.10%	61.0	1.5	69.0	1.6	No	No
36	-L- 509+55 LT 34.93452288/ -76.95227924	(5)UT to Tucker Creek	5.0	3.0	3.0	29.0	2900	982	1.28%	49.8	3.6	59.5	3.8	No	No
36	-RP2C- 6+14 RT 34.93389434/ -76.95095213	(5)UT to Tucker Creek	5.0	3.0	3.0	9.7	970	961	0.20%	28.0	1.9	33.0	1.7	No	No
46	-Y4- 34+27 LT 34.88145524/ -76.94511574	(7)UT of Southwest	2.0	3.0	3.0	3.6	360	1340	1.90%	14.9	3.8	17.6	4.0	No	No
46	-Y4- 34+33 RT 34.88123106/ -76.9449754	(7)UT of Southwest	2.0	3.0	3.0	2.6	260	810	1.63%	10.3	3.3	12.3	3.4	No	No

Additional Comments

*Note: Significant portion of drainage area to the swales on PSH36 is off-site water that is treated through sheet flow over pervious surfaces prior to entering our R/W and swales, length provided is greater than length required to treat the impervious area within our R/W.

Swale -Y3- 53+57 LT: Given Longitudinal slope is for the 411' immediately upstream of the buffers. Slope steepens further upstream.

Swale -Y4- 34+27 LT: Given Longitudinal slope is for the ditch immediately upstream of the buffers. Slope flattens out 155' upstream of the buffers.

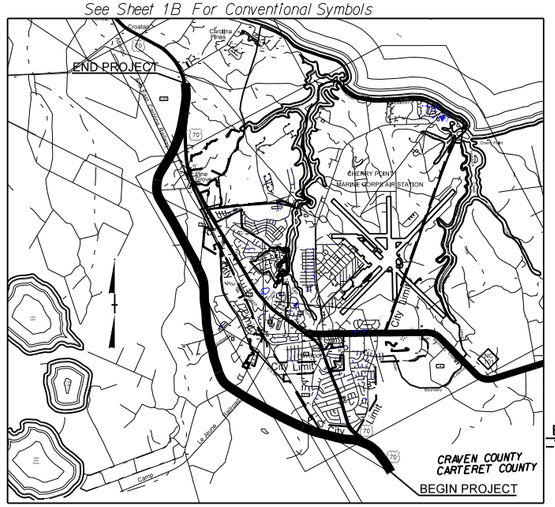
Swale -Y4- 34+33 RT: Given Longitudinal slope is for the ditch immediately upstream of the buffers. Slope flattens out 127' upstream of the buffers.

09/08/99

TIP PROJECT: R-1015

CONTRACT: C204177

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CRAVEN COUNTY

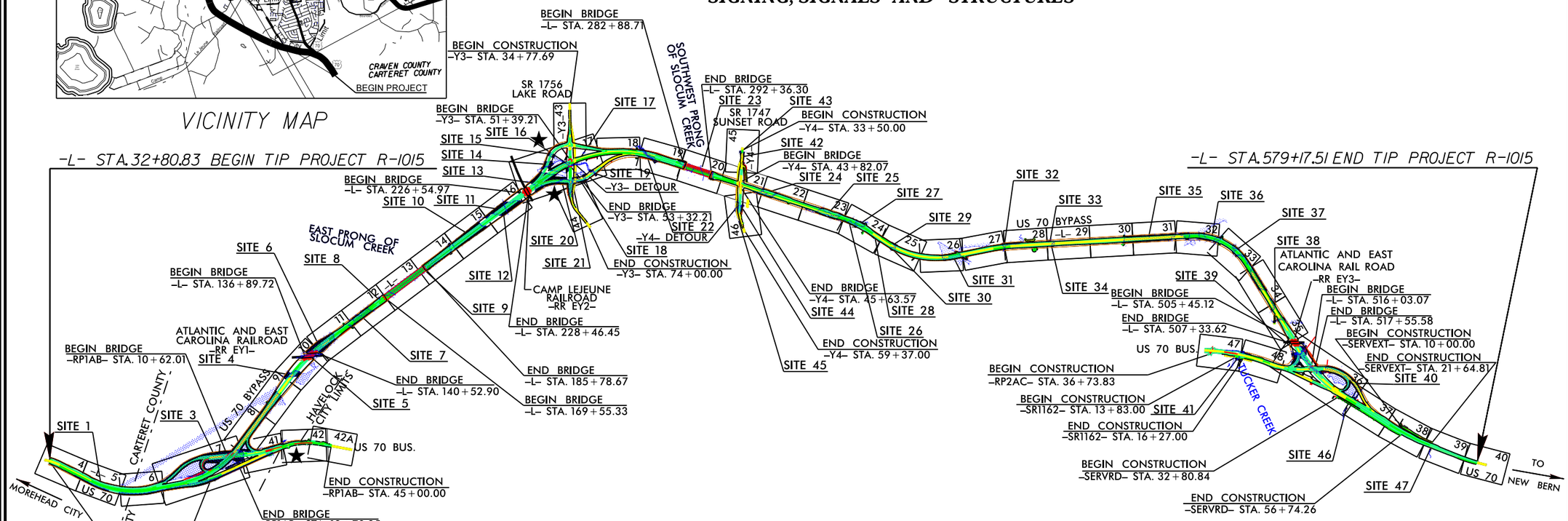
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-1015	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34360.1.2	NHF-70(49)	PE
34360.2.4	NHF-70(49)	RW
34360.2.5	NHF-70(49)	UTIL
34360.3.4	NHF-70(49)	CONST

LOCATION: US 70 (HAVELOCK BYPASS) FROM SOUTH OF CARTERET /CRAVEN COUNTY LINE TO SOUTH OF SR 1176, (CAROLINA PINES BLVD.)

PERMIT DRAWING
SHEET 1 OF 167

TYPE OF WORK: GRADING, DRAINAGE, PAVING, WIDENING, CULVERTS SIGNING, SIGNALS AND STRUCTURES



★ SIGNAL LOCATION

NCDOT CONTACT: ROADWAY DESIGN PROJECT ENGINEER
GARY LOVERING, P.E.

THIS IS A CONTROLLED-ACCESS PROJECT WITH PUBLIC ACCESS BEING LIMITED TO INTERCHANGES, GATED ENCROACHMENTS HAVE BEEN ADDED TO PROVIDE RESTRICTED ACCESS FOR US DEPT. OF AGRICULTURE (CROATAN NATIONAL FOREST) AND FOR UTILITY OWNERS.

WETLAND AND SURFACE WATER IMPACTS PERMIT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2015 = N/A
ADT 2035 = 22,900
K = 9 %
D = 60 %
T = 8 % *
V = 70 MPH
* TTST 3% DUAL 3%
FUNC. CLASS = FREEWAY (FUTURE INTERSTATE)

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R-1015 = 9.691 MILES
LENGTH OF STRUCTURE TIP PROJECT R-1015 = 0.657 MILES
TOTAL LENGTH OF TIP PROJECT R-1015 = 10.348 MILES

Prepared for NCDOT in the Office of:
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX (F-0105)

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 16, 2016

LETTING DATE: FEBRUARY 19, 2019

TIM REID, PE
PROJECT ENGINEER

TRENT HUFFMAN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
moffatt & nichol
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

11/14/2018
$$$$USERNAME$$$$
$$$$SYSTIME$$$$
C:\Projects\...\Roadway Design Drawings\Wetland & Stream\R1015_HYD_prm_wet_TSH.dgn

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

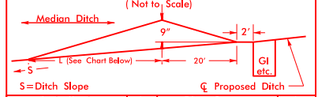
PERMIT DRAWING SHEET 2 OF 167

Details

DETAIL A
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM STA. 32+60 TO STA. 64+74.20 –L– (LT)
FROM STA. 0+00 TO STA. 7+00 –RP1B– (LT)
FROM STA. 10+75 TO STA. 29+00 –RP1CD– (LT)

DETAIL B
FALSE SUMP
(Not to Scale)

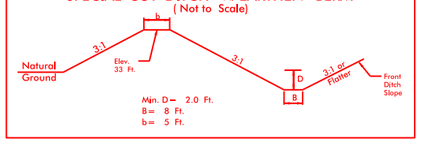


S=Ditch Slope

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

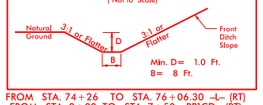
SEE PLANSHEETS FOR LOCATIONS

DETAIL C
SPECIAL CUT DITCH W/EARTHEN BERM
(Not to Scale)



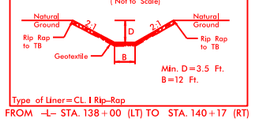
FROM STA. 79+50 TO STA. 86+87 –L– (LT)

DETAIL D
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM STA. 74+26 TO STA. 76+06.30 –L– (RT)
FROM STA. 0+00 TO STA. 7+50 –RP1CD– (RT)
FROM STA. 330+40 TO STA. 336+35 –L– (LT)
FROM STA. 330+17 TO STA. 335+00 –L– (RT)
FROM STA. 356+50 TO STA. 361+50 –L– (LT)

DETAIL E
STANDARD BASE DITCH
(Not to Scale)

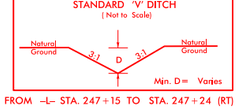


Type of Liner=CL I Rip-Rap
FROM –L– STA. 138+00 (LT) TO STA. 140+17 (RT)

DETAIL F
LATERAL 'V' DITCH
(Not to Scale)

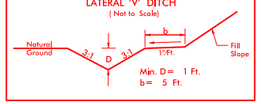
FROM –L– STA. 150+50 TO STA. 154+76 (RT)

DETAIL G
STANDARD 'V' DITCH
(Not to Scale)



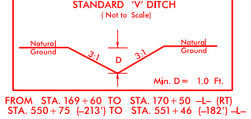
FROM –L– STA. 247+15 TO STA. 247+24 (RT)

DETAIL H
LATERAL 'V' DITCH
(Not to Scale)



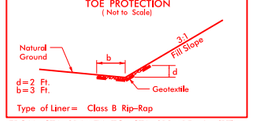
FROM STA. 165+23 TO STA. 169+60 –L– (RT)
FROM STA. 219+40 TO STA. 223+55 –L– (LT)
FROM STA. 363+57 TO STA. 364+30 –L– (RT)

DETAIL I
STANDARD 'V' DITCH
(Not to Scale)



FROM STA. 169+60 TO STA. 170+50 –L– (RT)
FROM STA. 550+75 (–213') TO STA. 551+46 (–182') –L– (LT)

DETAIL J
TOE PROTECTION
(Not to Scale)



Type of Liner= Class B Rip-Rap
FROM STA. 214+74 TO STA. 218+15 –L– (RT)
FROM STA. 16+60 TO STA. 19+49 –Y3RPB– (LT)
FROM STA. 271+00 TO STA. 273+10 –L– (RT)
FROM STA. 292+34 TO STA. 293+00 –L– (LT)
FROM STA. 470+00 TO STA. 471+20 –L– (LT)
FROM STA. 470+00 TO STA. 471+00 –L– (RT)

DETAIL L
LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 13+31 TO STA. 16+56 –Y3RPB– (LT)
FROM STA. 267+67 TO STA. 271+88 –L– (RT)

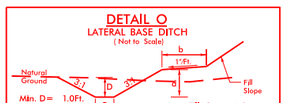
DETAIL M
LATERAL BASE DITCH
(Not to Scale)

FROM STA. 60+31 TO STA. 64+79 –Y3– (RT)
FROM STA. 250+09 TO STA. 253+89 –L– (RT)

DETAIL N
STANDARD BASE DITCH
(Not to Scale)

FROM STA.50+30 TO STA. 51+45 –Y3– (RT)
FROM STA. 52+76 TO STA. 53+50 –Y4– (LT)
FROM STA. 56+71 TO STA. 56+83 –Y4– (RT)

DETAIL O
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 47+45 TO STA. 50+30 –Y3– (RT)

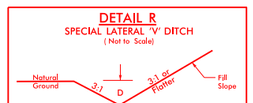
DETAIL P
LATERAL BASE DITCH
(Not to Scale)

FROM STA. 53+03 TO STA. 60+30 –Y3– (LT)

DETAIL Q
STANDARD BASE DITCH
(Not to Scale)

FROM STA. 52+60 TO STA. 52+92 –L– (LT)

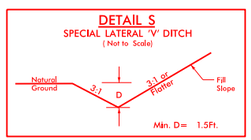
DETAIL R
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 68+34 TO STA. 73+89 –Y3– (LT)
FROM STA. 246+22 TO STA. 248+00 –L– (LT)
FROM STA. 58+00 TO STA. 59+25 –Y4– (RT)
FROM STA. 469+33 TO STA. 470+27 –L– (LT)
FROM STA. 529+15 TO STA. 530+50 –L– (LT)
FROM STA. 531+50 TO STA. 533+55 –L– (LT)
FROM STA. 526+50 TO STA. 530+14 –L– (RT)
FROM STA. 32+80.84 TO STA. 33+38 –SERVRD– (RT)
FROM STA. 35+17 TO STA. 37+10 –SERVRD– (RT)
FROM STA. 91+56 TO STA. 92+95 –RP2A– (LT)
FROM STA. 42+50 TO STA. 48+90 –SERVRD– (RT)
FROM STA. 53+92 TO STA. 56+47 –SERVRD– (RT)
FROM STA. 558+00 TO STA. 559+00 –L– (LT)
FROM STA. 10+25 TO STA. 14+50 –SERVEXT– (LT)
FROM STA. 53+92 TO STA. 56+47 –SERVRD– (RT)
FROM STA. 552+25 TO STA. 556+50 –L– (LT)
FROM STA. 16+00 TO STA. 17+80 –SERVEXT– (LT)

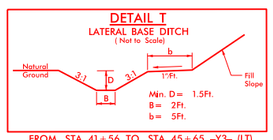
WETLAND AND SURFACE WATER IMPACTS PERMIT

DETAIL S
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



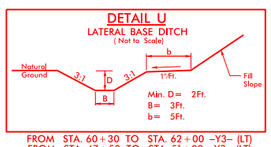
FROM STA. 65+16 TO STA. 73+89 –Y3– (RT)
FROM STA. 65+00 TO STA. 67+86 –Y3– (LT)
FROM STA. 63+00 TO STA. 65+86 –RP2AC– (RT)
FROM STA. 53+50 TO STA. 58+30 –RP2AC– (RT)
FROM STA. 37+45 TO STA. 42+50 –SERVRD– (RT)
FROM STA. 48+90 TO STA. 53+92 –SERVRD– (RT)

DETAIL T
LATERAL BASE DITCH
(Not to Scale)



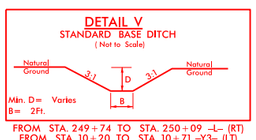
FROM STA. 41+56 TO STA. 45+65 –Y3– (LT)
FROM STA. 37+00 TO STA. 43+34 –Y4– (LT)
FROM STA. 38+00 TO STA. 43+50 –Y4– (RT)
FROM STA. 10+52 TO STA. 12+00 –Y4DR– (LT)
FROM STA. 45+26 TO STA. 49+73 –Y4– (RT)
FROM STA. 48+30 TO STA. 49+74 –Y4– (RT)

DETAIL U
LATERAL BASE DITCH
(Not to Scale)



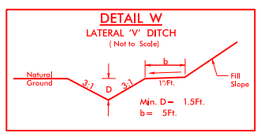
FROM STA. 60+30 TO STA. 62+00 –Y3– (LT)
FROM STA. 47+50 TO STA. 51+00 –Y3– (LT)

DETAIL V
STANDARD BASE DITCH
(Not to Scale)



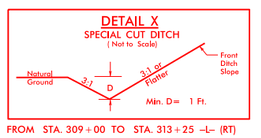
FROM STA. 249+74 TO STA. 250+09 –L– (RT)
FROM STA. 10+20 TO STA. 10+71 –Y3– (LT)
FROM STA. 377+78.7 TO STA. 377+97 –L– (LT)
FROM STA. 379+47 TO STA. 380+98.5 –L– (RT)

DETAIL W
LATERAL 'V' DITCH
(Not to Scale)



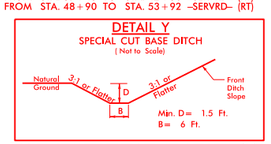
FROM STA. 269+75 TO STA. 278+50 –L– (LT)

DETAIL X
SPECIAL CUT DITCH
(Not to Scale)



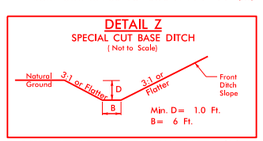
FROM STA. 309+00 TO STA. 313+25 –L– (RT)

DETAIL Y
SPECIAL CUT BASE DITCH
(Not to Scale)



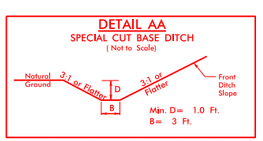
FROM STA. 310+00 –L– TO STA. 313+00 –L– (LT)

DETAIL Z
SPECIAL CUT BASE DITCH
(Not to Scale)



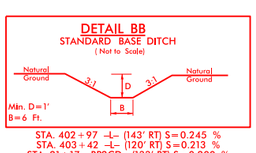
FROM STA. 313+00 TO STA. 319+50 –L– (LT)
FROM STA. 329+67 TO STA. 330+40 –L– (LT)
FROM STA. 361+50 TO STA. 372+10 –L– (LT)

DETAIL AA
SPECIAL CUT BASE DITCH
(Not to Scale)



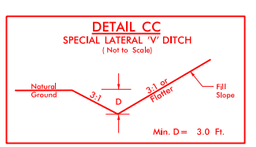
FROM STA. 342+60 TO STA. 345+56 –L– (RT)
FROM STA. 352+35 TO STA. 356+50 –L– (RT)

DETAIL BB
STANDARD BASE DITCH
(Not to Scale)



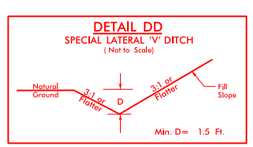
STA. 402+97 –L– (143' RT) S=0.245 %
STA. 403+42 –L– (120' RT) S=0.213 %
STA. 21+17 –RP2CD– (133' RT) S=0.200 %

DETAIL CC
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



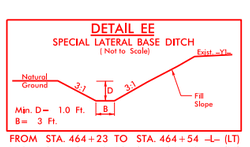
FROM STA. 10+50 TO STA. 13+50 –DR1– (LT)

DETAIL DD
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



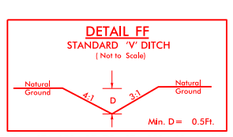
FROM STA. 40+50 TO STA. 41+63 –RP2AC– (RT)

DETAIL EE
SPECIAL LATERAL BASE DITCH
(Not to Scale)



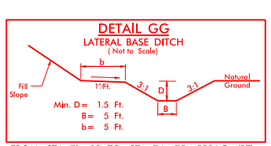
FROM STA. 464+23 TO STA. 464+54 –L– (LT)
FROM STA. 464+42 TO STA. 464+59 –L– (RT)
FROM STA. 464+83 TO STA. 465+29 –L– (LT)
FROM STA. 464+90 TO STA. 465+15 –L– (RT)

DETAIL FF
STANDARD 'V' DITCH
(Not to Scale)



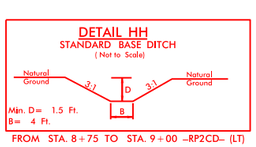
FROM STA. 153+37 TO STA. 153+63 –L– (LT)
FROM STA. 486+30 TO STA. 486+76 –L– (LT)
FROM STA. 21+18 (137') TO STA. 22+52 (117.3') –RP2CD– (RT)

DETAIL GG
LATERAL BASE DITCH
(Not to Scale)



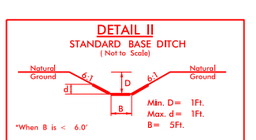
FROM STA. 71+92 TO STA. 74+75 –RP2AC– (RT)
FROM STA. 519+38 TO STA. 520+10 –L– (LT)

DETAIL HH
STANDARD BASE DITCH
(Not to Scale)



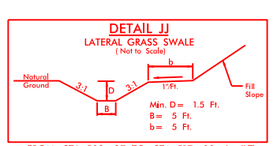
FROM STA. 8+75 TO STA. 9+00 –RP2CD– (LT)

DETAIL II
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= PSRM
FROM STA. 512+94 TO STA. 514+35 –L– (RT)

DETAIL JJ
LATERAL GRASS SWALE
(Not to Scale)



FROM STA. 509+37 TO STA. 517+00 –L– (LT)

11142018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_details.dgn

$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$
$$$$$CELLSCALE$$$$$

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

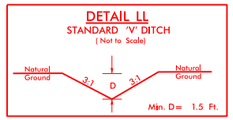
PERMIT DRAWING SHEET 3 OF 167

Details (cont.)

DETAIL KK
SPECIAL LATERAL BASE DITCH
(Not to Scale)

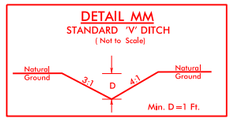
FROM STA. 9+00 TO STA. 11+65 –RP2CD– (LT)
FROM STA. 563+25 TO STA. 565+50 –L– (LT)

DETAIL LL
STANDARD 'V' DITCH
(Not to Scale)



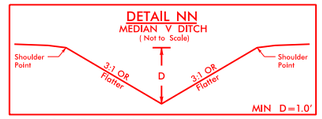
STA. 90+41 –RP2A– (LT)
FROM STA. 12+15 TO STA. 12+89 –RP2CD– (RT)
FROM STA. 534+65 TO STA. 535+02 –L– (LT)
FROM STA. 536+53 TO STA. 536+74 –L– (LT)
FROM STA. 536+83 TO STA. 537+43 –L– (LT)

DETAIL MM
STANDARD 'V' DITCH
(Not to Scale)



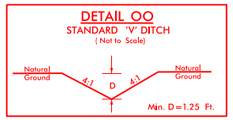
STA. 11+66 to 12+05 –RP2CD– (LT)

DETAIL NN
MEDIAN 'V' DITCH
(Not to Scale)



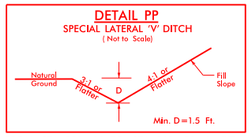
FROM STA. 162+00 TO STA. 167+00 –L– (MED)
FROM STA. 224+00 TO STA. 226+26 –L– (MED)
FROM STA. 434+50 TO STA. 450+50 –L– (MED)
FROM STA. 530+14 TO STA. 536+00 –L– (RT)
FROM STA. 537+00 TO STA. 579+00 –L– (RT)
FROM STA. 555+00 TO STA. 559+50 –L– (MED)
FROM STA. 566+47 TO STA. 575+00 –L– (MED)
FROM STA. 575+00 TO STA. 579+17.51 –L– (MED)

DETAIL OO
STANDARD 'V' DITCH
(Not to Scale)



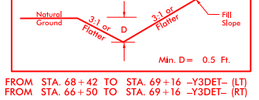
STA. 533+55 –L– (LT) S=6.8 %

DETAIL PP
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 559+00 TO STA. 562+50 –L– (LT)

DETAIL QQ
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 544+00 TO STA. 552+25 –L– (LT)
FROM STA. 562+50 TO STA. 563+25 –L– (LT)

DETAIL RR
LATERAL BASE DITCH
(Not to Scale)

FROM STA. 53+50 TO STA. 54+50 –Y4– (LT)
STA. 11+00 –SERVEXT– S=0.286 %

DETAIL SS
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 34+57 TO STA. 41+17 –Y3– (LT)
FROM STA. 543+00 TO STA. 544+00 –L– (LT)

DETAIL TT
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 34+57 TO STA. 37+79 –Y3– (RT)

DETAIL UU
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 38+60 TO STA. 41+50 –Y3– (RT)

DETAIL WW
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 34+23 TO STA. 37+00 –Y4– (LT)
FROM STA. 34+47 TO STA. 38+00 –Y4– (RT)
FROM STA. 12+00 TO STA. 15+70 –Y4DR– (LT)
FROM STA. 12+00 TO STA. 15+70 –Y4DR– (LT)

DETAIL XX
PIPE INLET CHANNEL AND BANK STABILIZATION
(Not to Scale)

Length= 25Ft.
Est.= 20 Tons of Class I Rip–Rap
STA. 51+65 –Y4– (LT)

DETAIL YY
PIPE OUTLET CHANNEL
(Not to Scale)

Length= 30Ft.
Est.= 100 Tons of Class I Rip–Rap
STA. 52+38 –Y4– (RT)

DETAIL ZZ
DITCH BLOCK
(Not to Scale)

STA. 58+77 –Y4– (LT)

DETAIL AAA
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 38+50 TO STA. 42+50 –RP2AC– (RT)

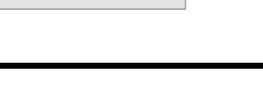
DETAIL CCC
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM STA. 341+50 –L– TO STA. 347+63 –L– (LT)

DETAIL DDD
LATERAL BASE DITCH
(Not to Scale)

FROM STA. 7+27 TO STA. 8+36 –RP2C– (RT)

DETAIL EEE
STANDARD BASE DITCH
(Not to Scale)



STA. 6+14 to 7+27 –RP2C–
STA. 72+02 to 72+50 –RP2AC– (RT)

DETAIL FFF
STANDARD BASE DITCH
(Not to Scale)

FROM STA. 34+12 TO STA. 34+47 –Y4– (RT)

DETAIL GGG
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 54+50 TO STA. 58+66 –Y4– (LT)

DETAIL HHH
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 56+83 TO 58+00 –Y4– (RT)

DETAIL MMM
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM STA. 33+48 TO STA. 36+78 –RP1CD– (RT)

DETAIL NNN
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM STA. 28+39.21 TO STA. 30+00 –RP1AB– (RT)
FROM STA. 36+78 TO STA. 36+93.06 –RP1CD– (RT)

DETAIL OOO
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM STA. 12+50 TO 33+48 –RP1CD– (RT)
FROM STA. 0+00 TO 0+55 –RP1A– (RT)
FROM STA. 22+04.84 TO 28+50 –RP1AB– (LT)

DETAIL PPP
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM STA. 7+50 TO 12+50 –RP1CD– (RT)

DETAIL QQQ
MEDIAN 'V' DITCH
(Not to Scale)

–RP1AB– FROM STA. 20+50 TO STA. 22+70 –RP1AB– (MED)

DETAIL RRR
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM STA. 32+60 TO STA. 74+26 –L– (RT)

DETAIL SSS
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 62+00 TO STA. 65+00 –Y3– (LT)

DETAIL T1
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 42+50 TO STA. 51+13 –Y3DET– (RT)
FROM STA. 55+00 TO STA. 59+50 –Y3DET– (RT)
FROM STA. 38+25 TO STA. 40+25 –Y4DET– (LT)
FROM STA. 54+00 TO STA. 55+00 –Y4DET– (LT)

DETAIL T2
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 50+50 TO STA. 52+99 –Y3DET– (LT)
FROM STA. 54+50 TO STA. 61+00 –Y3DET– (LT)
FROM STA. 34+52 TO STA. 38+78 –Y4DET– (RT)

DETAIL T3
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 68+42 TO STA. 69+16 –Y3DET– (LT)
FROM STA. 66+50 TO STA. 69+16 –Y3DET– (RT)

DETAIL T4
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 53+10 TO STA. 54+50 –Y3DET– (LT)
FROM –Y3DET– STA. 61+00 TO STA. 67+93 (LT)

DETAIL T7
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 36+29 TO STA. 40+50 –Y3DET– (LT)

DETAIL T8
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 55+00 TO STA. 55+75 –Y4DET– (LT)

DETAIL T10
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 61+21 TO STA. 64+50 –Y3DET– (RT)

WETLAND AND SURFACE WATER IMPACTS PERMIT

11/4/2018
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5/28/99

DETAIL FOR –Y3– DETOUR

PROJECT REFERENCE NO.	SHEET NO.
R–1015	2B–2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROAD, SUITE 300
ILEIGH, NC 27609
(919) 781-4626 FAX
(919) 431-0105

PERMIT DRAWING SHEET 4 OF 167

2X

WEYERHAEUSER COMPANY

4

SITE 17A

Q10 = 21.4 CFS
V10 = 2.12 FPS

Q10 = 15.4 CFS
V10 = 3.6 FPS

-Y3DET- PC Sta. 45+62.58

-Y3DET- PC Sta. 56+16.69

NAD 83

MATCHLINE SHEET 2B-1 -Y3DET- STA 45+00.00

MATCHLINE SHEET 2B-3 -Y3DET- STA 59+00.00

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T2

REMOVE AFTER DETOUR

24" TEMP.

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T1

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T4

TEMP. SPECIAL LAT SEE DETAIL T2

TEMP. SPECIAL LATER SEE DETAIL T1

N 60°47' 21.8" E

Y3 60" TEMP.

BZ 1 BZ 2

20.00' TYP

22.58

PDE

LAKE ROAD SR 1756 (19.5' BST)

EXIST R/W

60.00'

WOODS

SITE 18A

T T — DENOTES TEMPORARY FILL IN WETLAND

HC HC — DENOTES HAND CLEARING

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100'
GRAPHIC SCALE

SEE SHEETS 3D-1 THRU 3D-2 FOR DRAINAGE DITCH DETAILS

IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN IN GRAY FOR REFERENCE PURPOSES. SEE PSH 17 (PERMIT DRAWING SHEET 58 OF 167) FOR PERMANENT ALIGNMENT IMPACTS.

-Y3- DET

DITCH LEGEND
MEDIAN DITCH
LEFT DITCH
RIGHT DITCH

PI = 47+50.00
EL = 30.20'
K = 190
VC = 120'

(+)0.3063% (-)0.3256%

(-)0.1231%

(+)3.65% (-)1.0840% (-)1.5705%

(+)0.3000%

(+)0.1000% (+)0.0100%

TEMP. 24" -Y3DET- STA. 50+50 ELEV. = 23.18'

TEMP. 60" -Y3DET- STA. 53+08 ELEV. = 18.28'

TEMP. 24" -Y3DET- STA. 55+00 ELEV. = 20.96'

+50.00 RT 23.31'

BEGIN DITCH +50.00 LT 23.06'

END DITCH +50.00 RT 24.17'

+50.00 LT 22.22

END DITCH +49.88 LT 19.88'

BEGIN DITCH +50.00 LT 19.32'

+100.00 LT 19.88'

BEGIN DITCH +100.00 RT 22.00'

0 10 20 30 40 50 60 70

45 46 47 48 49 50 51 52 53 54 55 56 57 58 59

11/14/2018
mgilmore
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 5 OF 167

DETAIL FOR -Y3- DETOUR

SITE 17A

SITE 18A

2X

WEYERHAEUSER COMPANY

4

Q10 = 15.4 CFS
V10 = 3.6 FPS

Q10 = 21.4 CFS
V10 = 2.12 FPS

NAD 83

-Y3DET- PC Sta. 45+62.58

-Y3DET- PC Sta. 46+06.44

-Y3DET- PC Sta. 56+16.69

MATCHLINE SHEET 2B-1 -Y3DET- STA 45+00.00

MATCHLINE SHEET 2B-3 -Y3DET- STA 59+00.00

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T2

REMOVE AFTER DETOUR

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T1

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T4

24" TEMP.

N 60°47'21.8" E

LAKE ROAD SR 1756 (19.5' BST)

EXIST R/W

BZ 1

BZ 2

T T DENOTES TEMPORARY FILL IN WETLAND

HC HC DENOTES HAND CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE 100' 0' 100'

SEE SHEETS 3D-1 THRU 3D-2 FOR DRAINAGE DITCH DETAILS

IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN IN GRAY FOR REFERENCE PURPOSES. SEE PSH 17 (PERMIT DRAWING SHEET 58 OF 167) FOR PERMANENT ALIGNMENT IMPACTS.

-Y3- DET

PI = 47+50.00
EL = 30.20'
K = 190
VC = 120'

(+)0.3063%
(-)0.3256%
(-)0.1237%
(+)4.365%
(-)0.8400%
(-)1.1705%
(+)0.3000%
(+)0.0000%

TEMP. 24"
-Y3DET- STA. 50+50 ELEV. = 23.18'

TEMP. 60"
-Y3DET- STA. 53+08 ELEV. = 18.28'

TEMP. 24"
-Y3DET- STA. 55+00 ELEV. = 20.96'

+50.00 RT 23.31'
BEGIN DITCH +50.00 RT 23.06'
END DITCH +95.00 RT 24.01'
+150.00 LT 22.22'
END DITCH +99.00 LT 19.88'
BEGIN DITCH +100.00 LT 19.32'
+100.00 LT 19.88'
BEGIN DITCH +100.00 RT 22.00'

DITCH LEGEND
MEDIAN DITCH
LEFT DITCH
RIGHT DITCH

70 60 50 40 30 20 10 0

45 46 47 48 49 50 51 52 53 54 55 56 57 58 59

11/4/2018
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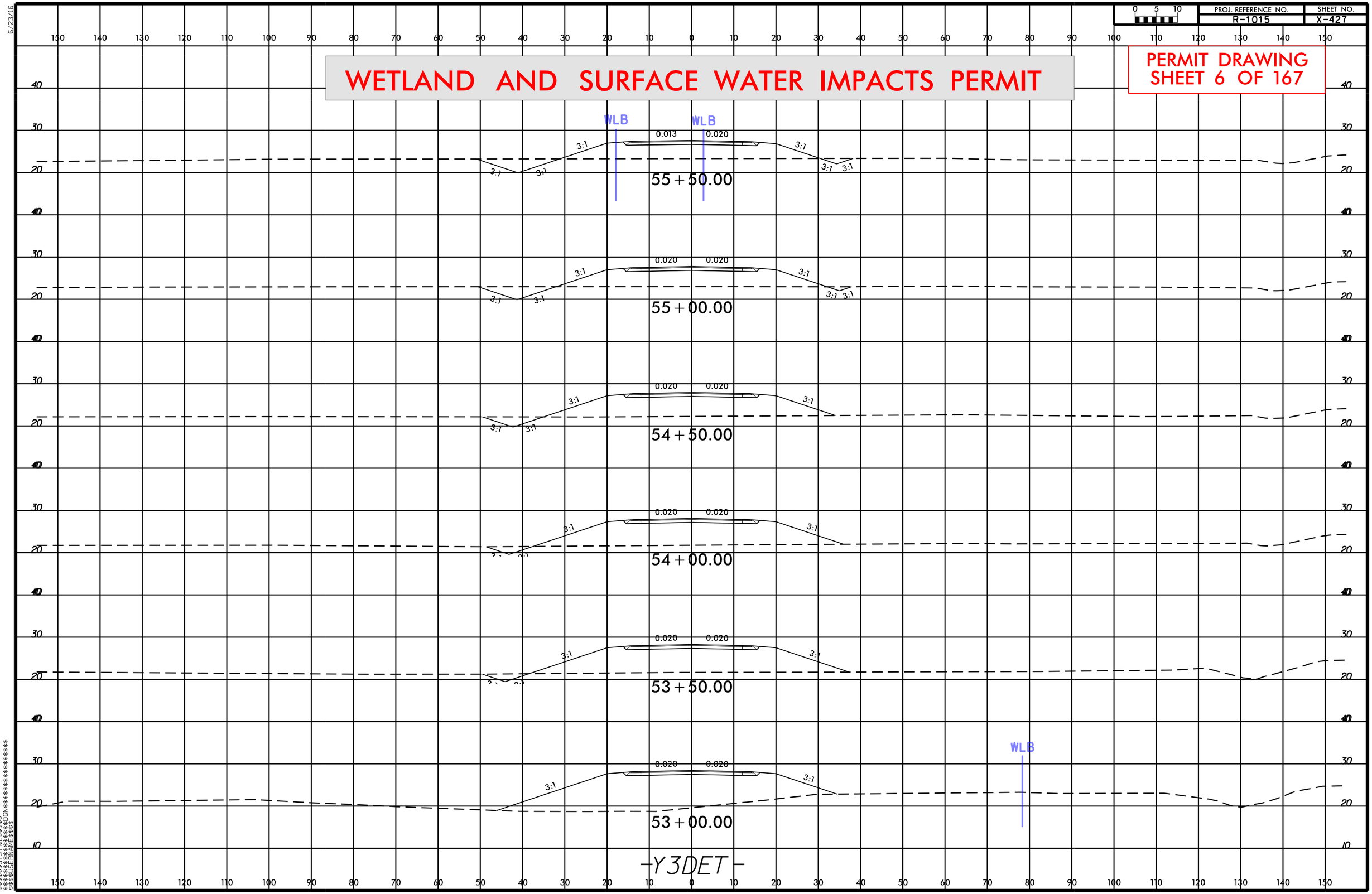
	R-1015	X-427

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 6 OF 167



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DETAIL FOR –Y3– DETOUR

SITE 21A

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-3

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4865 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 7 OF 167

MATCHLINE SHEET 2B-2 –Y3DET– STA 59+00.00

–Y3DET– PT Sta.60+25.60

–Y3DET– PC Sta.62+30.22

WEYERHAEUSER COMPANY DB 1048 - PG 1014 (4)

JEAN E. SANBORN DB 1086 - PG 698 (47)

LYNN WILSON, et ux DB 615 - PG 73 (56 57)

ELLA FAY STEELE DB 1144 - PG 919 (58)

ROBERT SAMUEL CLARK, et ux DB 654 - PG 223 DB 1011 - PG 798 (59)

ROBERT SAMUEL CLARK, et ux DB 879 - PG 362 (48)

Q10 = 6.8 CFS
V10 = 1.8 FPS

TEMP 18"

REMOVE AFTER DETOUR

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T10

Q10 = 4.5 CFS
V10 = 2.9 FPS

MAINTAIN DRAINGE BETWEEN –Y3DET– AND –Y3– EXIST. IN TEMP CHANNEL DURING CONSTRUCTION OF PROP. –Y3– OUTER LANE

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T4

FILL IN POOL

GTD TO DRAIN PROP. –Y3– SAG TO TEMP. CHANNEL WHILE CONSTRUCTING THE PROP. OUTER LANE OF –Y3–

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T3

SHIFT TO PROP. –Y3– DRIVE PIPE LOCATION AFTER DETOUR

TIE PROP. TEMP. DITCH TO EXIST. DITCH

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T3

TIE PROP. TEMP. DITCH TO EXIST. DITCH

END CONSTRUCTION –Y3DET– Sta.69+00.00

NAD 83

E — DENOTES EXCAVATION IN WETLAND

HC HC — DENOTES HAND CLEARING

T T — DENOTES TEMPORARY FILL IN WETLAND

100' 0' 100' 200' 300'
GRAPHIC SCALE

SEE SHEETS 3D-1THRU 3D-2 FOR DRAINAGE DITCH DETAILS

IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN IN GRAY FOR REFERENCE PURPOSES. SEE PSH 44 (PERMIT DRAWING SHEET 148 OF 167) FOR PERMANENT ALIGNMENT IMPACTS.

–Y3– DET

DITCH LEGEND
MEDIAN DITCH
LEFT DITCH
RIGHT DITCH

PI = 64+70.00
EL = 24.60'
K = 63
VC = 100'

PI = 67+30.00
EL = 27.90'
K = 96
VC = 190'

END GRADE –Y3DET– STA 69+00.00 ELEV = 26.70'

TEMP. 18" –Y3DET– STA. 61+21 ELEV. = 20.61'

(+)0.0000% (+)1.0000% (+)2.2333% (+)0.3914% (−)0.3256% (+)1.2692% (+)0.7153% (−)0.7059% (−)0.1805% (+)0.4595%

END DITCH 4+90.00 RT 22.45'
BEGIN DITCH 1+62.00 RT 20.70'
+90.00 LT 20.54'
+00.00 RT 21.10'
END DITCH 4+90.00 RT 22.45'
+00.00 LT 21.91'
BEGIN DITCH 4+90.00 RT 25.56'
END DITCH 4+60.00 RT 24.00'
BEGIN DITCH 1+42.00 LT 24.91'
END DITCH 4+60.00 LT 25.10'
END DITCH 4+60.00 LT 24.57'

PROPOSED UNDERCUT

59 60 61 62 63 64 65 66 67 68 69 70 71
70 60 50 40 30 20 10 0

11/4/2018
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5/28/99

DETAIL FOR –Y3– DETOUR

SITE 21A

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-3

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4865 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 8 OF 167

NAD 1983

MATCHLINE SHEET 2B-2 –Y3DET– STA 59+00.00

PT Sta 60+25.60

–Y3DET– PC Sta. 62+30.22

WEYERHAEUSER COMPANY DB 1048 - PG 1014 (4)

JEAN E. SANBORN DB 1086 - PG 698 (47)

LYNN WILSON, et ux DB 615 - PG 73 (56 57)

ELLA FAY STEELE DB 1144 - PG 919 (58)

ROBERT SAMUEL CLARK, et ux DB 654 - PG 223 DB 1011 - PG 798 (59)

ROBERT SAMUEL CLARK, et ux DB 879 - PG 362 (48)

WEYERHAEUSER COMPANY DB 1048 - PG 1014 (4)

Q10= 6.8 CFS V10= 1.8 FPS

TEMP 18"

REMOVE AFTER DETOUR

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T4

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T10

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T3

SHIFT TO PROP. –Y3– DRIVE PIPE LOCATION AFTER DETOUR

TIE PROP. TEMP. DITCH TO EXIST. DITCH

FILL IN POOL

MAINTAIN DRAINAGE BETWEEN –Y1DET– AND –Y3– EXIST. IN TEMP CHANNEL DURING CONSTRUCTION OF PROP. –Y3– OUTER LANE

GID TO DRAIN PROP. –Y3– SAG TO TEMP. CHANNEL WHILE CONSTRUCTING THE PROP. OUTER LANE OF –Y3–

N 76° 04' 30" E

N 24° 41' 48" E

END CONSTRUCTION –Y3DET– Sta. 69+00.00

54.00 –Y3– 62.00' RT 72.00' RT

44.00 –Y3– 62.00' RT 72.00' RT

73.00 –Y3– 75.00' RT 90.00' RT

63.00 –Y3– 80.00' RT 90.00' RT

DENOTES EXCAVATION IN WETLAND

DENOTES HAND CLEARING

DENOTES TEMPORARY FILL IN WETLAND

100' 0' 100' 200' 300'

GRAPHIC SCALE

SEE CASHEETS 3D-1 THRU 3D-2 FOR DRAINAGE DITCH DETAILS

IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN IN GRAY FOR REFERENCE PURPOSES. SEE PSH 44 (PERMIT DRAWING SHEET 148 OF 167) FOR PERMANENT ALIGNMENT IMPACTS.

-Y3- DET

DITCH LEGEND
MEDIAN DITCH
LEFT DITCH
RIGHT DITCH

END GRADE –Y3DET– STA 69+00.00 ELEV = 26.70'

PI = 64+70.00 EL = 24.60' K = 63 VC = 100'

PI = 67+30.00 EL = 27.90' K = 96 VC = 190'

TEMP. 18" –Y3DET– STA. 61+21 ELEV. = 20.61'

(+)1.0000% (+)1.0000% (+)1.0235% (+)1.0591% (+)2.2333% (-)0.3256% (+)1.2692% (+)0.7133% (+)1.2692% (-)0.7059% (-)0.1805% (+)0.4595%

END DITCH 4+50.00 RT 23.45'

BEGIN DITCH 4+50.00 RT 20.76'

+50.00 LT 20.54'

+00.00 RT 21.10'

END DITCH 4+50.00 RT 24.45'

+00.00 LT 21.91'

BEGIN DITCH 4+50.00 RT 25.56'

END DITCH 4+50.00 LT 24.00'

BEGIN DITCH 4+52.00 LT 24.91'

END DITCH 4+60.00 RT 25.10'

END DITCH 4+80.00 LT 24.57'

PROPOSED UNDERCUT

59 60 61 62 63 64 65 66 67 68 69 70 71

0 10 20 30 40 50 60 70

11/14/2018
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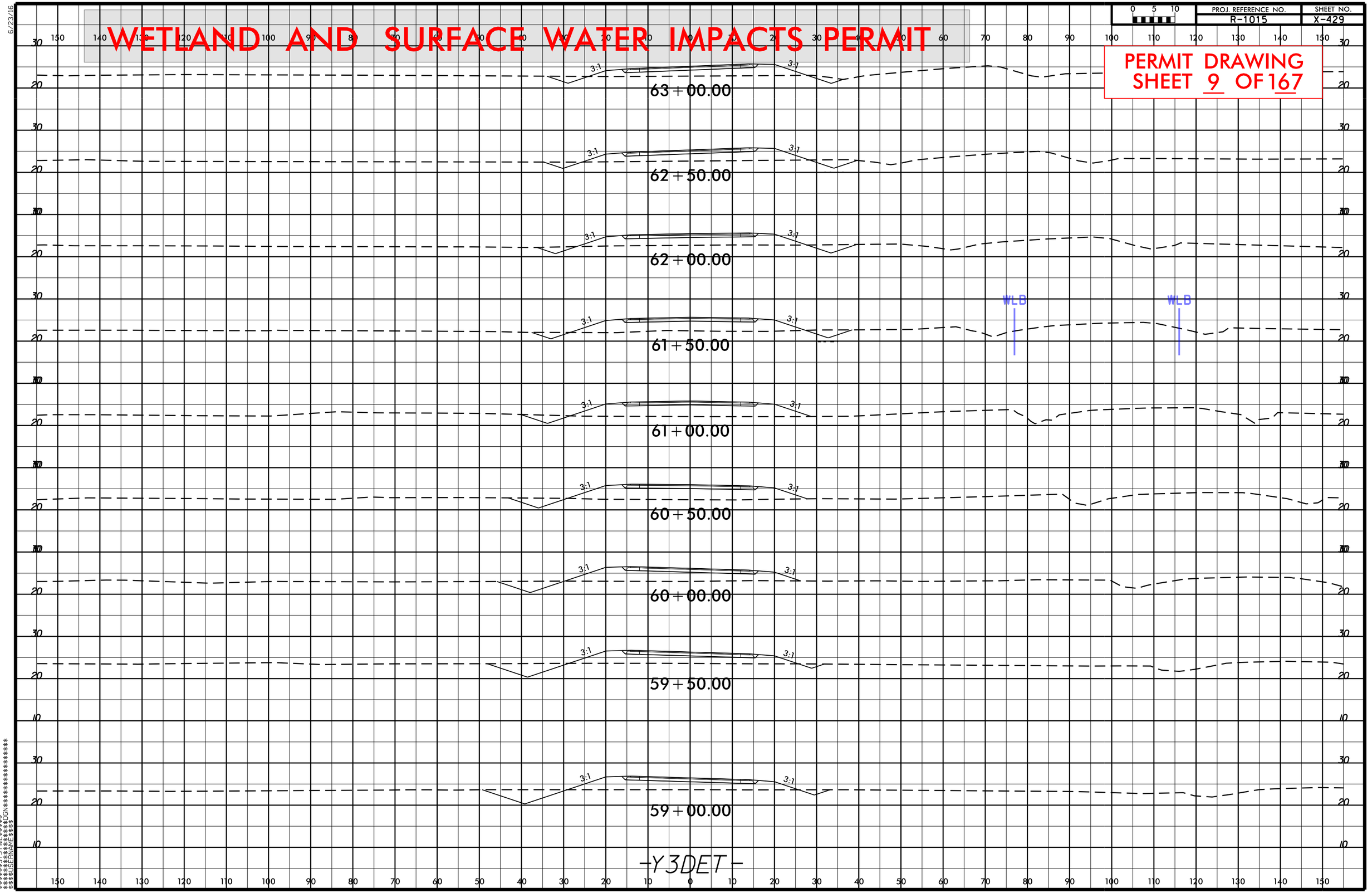
6/23/16

WETLAND AND SURFACE WATER IMPACTS PERMIT

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-429

PERMIT DRAWING
SHEET 9 OF 167



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PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-5

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

PERMIT DRAWING SHEET 10 OF 167

IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN IN GRAY FOR REFERENCE PURPOSES. SEE PSH 46 (PERMIT DRAWING SHEET 154 OF 167) FOR PERMANENT ALIGNMENT IMPACTS.

DETAIL FOR –Y4– DETOUR

HC HC — DENOTES HAND CLEARING

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

T T — DENOTES TEMPORARY FILL IN WETLAND

NAD 83

UNITED STATES AGRICULTURE CROATAN NATIONAL FOREST (2)

Q10 = 336 CFS
HW/D 10YR = 1.2

–Y4DET– PT Sta. 40+66.57

–Y4DET– PC Sta. 52+05.93

–Y4DET– STA 40+00.00

–Y4DET– STA 54+00.00

MATCHLINE SHEET 2B-5 –Y4DET– STA 40+00.00

MATCHLINE SHEET 2B-6 –Y4DET– STA 54+00.00

N 65° 59' 32" E

REMOVE SYSTEM WHEN DETOUR REMOVED

SUNSET ROAD (SR 1141 (OLD EST))

TEMP. 2GI (CONSTRUCT AS –Y4– IS CONSTRUCTED AT INTERSECTION OF –Y4– AND –Y4DET– FILL SLOPES). REMOVE WHEN DETOUR REMOVED

TEMP. 18"

CL B RIP RAP EST. 3 TONS EST. 10 SY GF

REMOVE WHEN DETOUR REMOVED

CL I RIP RAP EST. 26 TONS EST. 55 SY GF

REMOVE WHEN DETOUR REMOVED

CLASS B RIPRAP REMOVE AFTER DETOUR EST. 2 TONS EST. 7 SY GF

WOODS

GATE

10' SOIL RD

12" RCP

40" RCP

GRAPHIC SCALE 100' 0' 100' 200' 300'

SITE 45A

SEE SHEETS 3D-1 THRU 3D-2 FOR DRAINAGE DITCH DETAILS

–Y4– DET

PI = 41+00.00
EL = 27.50'
K = 198
VC = 80'

PI = 48+40.00
EL = 32.35'
K = 31
VC = 170'

PI = 52+60.00
EL = 13.20'
K = 49
VC = 300'

(+)0.5162%
(+)0.5238%
(+)0.7230%
(+)0.7230%
(–)4.6786%
(–)4.6786%
(+)11.4164%

END DITCH 12.50' LT 22.34'

TEMP. 18" –Y4DET– STA. 54+00 ELEV. = 11.38'

TEMP. 84" –Y4DET– STA. 52+57 ELEV. = 6.52'

DITCH LEGEND
MEDIAN DITCH
LEFT DITCH
RIGHT DITCH

60 50 40 30 20 10 0 –10

40 41 42 43 44 45 46 47 48 49 50 51 52 53 54

11/14/2018
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IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN IN GRAY FOR REFERENCE PURPOSES. SEE PSH 46 (PERMIT DRAWING SHEET 154 OF 167) FOR PERMANENT ALIGNMENT IMPACTS.

DETAIL FOR –Y4– DETOUR

PROJECT REFERENCE NO.	SHEET NO.
R–1015	2B–5

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

PERMIT DRAWING SHEET 11 OF 167

HC HC DENOTES HAND CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

T T DENOTES TEMPORARY FILL IN WETLAND

NAD 83

UNITED STATES AGRICULTURE CROATAN NATIONAL FOREST (2)

Q10= 336 CFS
HW/D 10YR = 1.2

–Y4DET– PT Sta. 40+66.57

–Y4DET– PC Sta. 52+05.93

MATCHLINE SHEET 2B–5 –Y4DET– STA 40+00.00

MATCHLINE SHEET 2B–6 –Y4DET– STA 50+00.00

N 65° 59' 32" E

REMOVE SYSTEM (SUNSET ROAD) WHEN DETOUR REMOVED

TEMP. 2GF (CONSTRUCT AS –Y4– IS CONSTRUCTED AT INTERSECTION OF –Y4– AND –Y4DET– FILL SLOPES) REMOVE WHEN DETOUR REMOVED

REMOVE WHEN DETOUR REMOVED

CL B RIP RAP EST. 10 TONS EST. 10 SY GF

CL I RIP RAP EST. 26 TONS EST. 65 SY GF

REMOVE WHEN DETOUR REMOVED

CLASS B RIPRAP REMOVE AFTER DETOUR EST. 2 TONS EST. 7 SY GF

GRAPHIC SCALE 100′ 0′ 100′ 200′ 300′

SITE 45A

SEE SHEETS 3D-1 THRU 3D-2 FOR DRAINAGE DITCH DETAILS

–Y4– DET

DITCH LEGEND	
MEDIAN DITCH	— — — —
LEFT DITCH	— - - — -
RIGHT DITCH	- - - - - - - -

PI = 41+00.00
EL = 27.50'
K = 198
VC = 80'

PI = 48+40.00
EL = 32.85'
K = 31
VC = 170'

PI = 52+60.00
EL = 15.20'
K = 49
VC = 300'

(+)0.5238%

(+)0.5182%

(+)0.7230%

(+)0.7230%

(–)4.6786%

(–)4.6786%

(+)1.4164%

END DITCH EL=25.47' 22.47'

TEMP. 18" –Y4DET– STA. 54+00 ELEV.=11.38'

TEMP. 84" –Y4DET– STA. 52+57 ELEV.=6.52'

60 50 40 30 20 10 0 –10

40 41 42 43 44 45 46 47 48 49 50 51 52 53 54

$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$LEGEND$$$$$$$$

1/14/2018
mgberry
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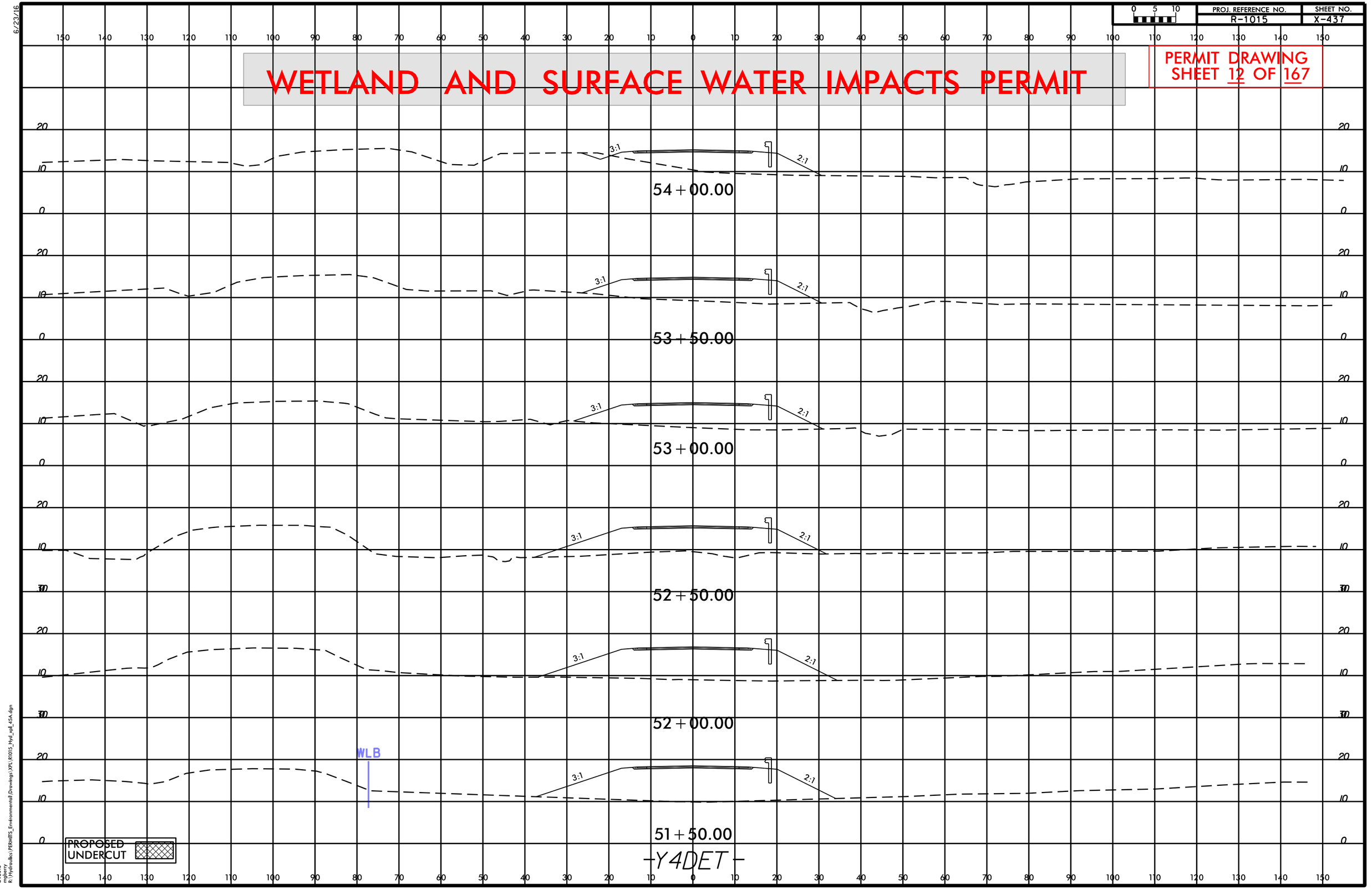
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-437

PERMIT DRAWING
SHEET 12 OF 167

WETLAND AND SURFACE WATER IMPACTS PERMIT



8/1/2018
mgberry
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-6

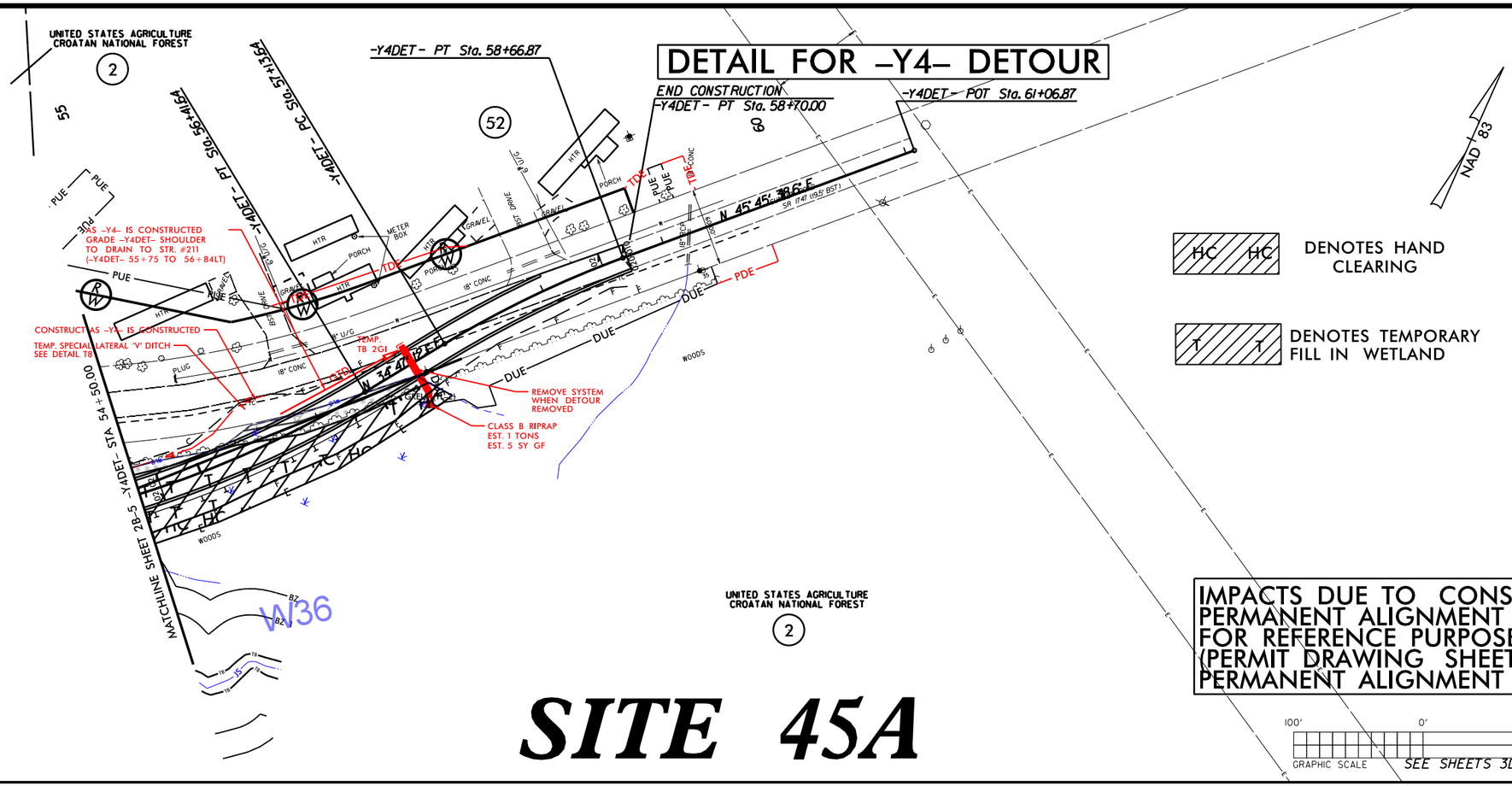
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4865 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 13 OF 167

DETAIL FOR -Y4- DETOUR



HC HC DENOTES HAND CLEARING

T T DENOTES TEMPORARY FILL IN WETLAND

IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN IN GRAY FOR REFERENCE PURPOSES. SEE PSH 46 (PERMIT DRAWING SHEET 154 OF 167) FOR PERMANENT ALIGNMENT IMPACTS.

100' 0' 100' 200' 300'
GRAPHIC SCALE

SEE SHEETS 3D-1THRU 3D-2 FOR DRAINAGE DITCH DETAILS

SITE 45A

11/4/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_PSH2B-6.dgn
$$$$$$$$SYSTIME $$$$$$
$$$$$$$$LEVELS $$$$$$
$$$$$$$$DGN$$$$$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-6

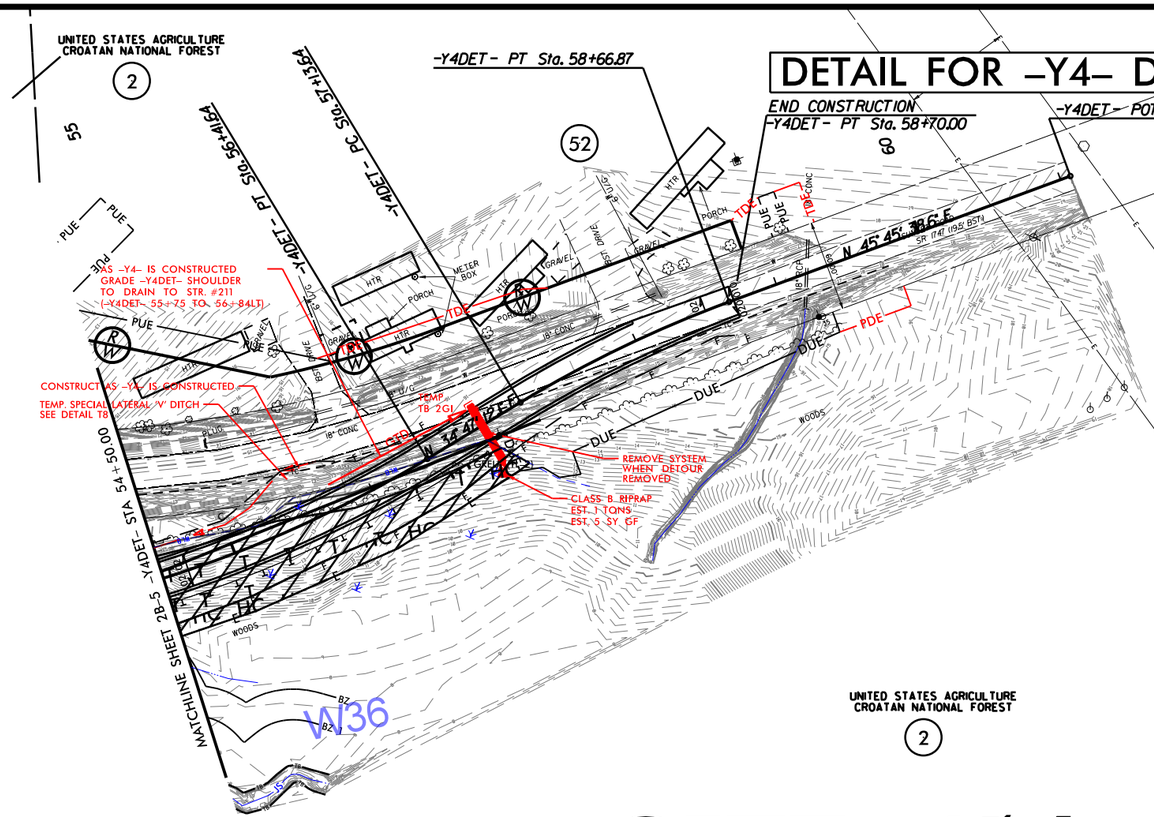
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4865 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 14 OF 167

DETAIL FOR -Y4- DETOUR



HC HC DENOTES HAND CLEARING

T T DENOTES TEMPORARY FILL IN WETLAND

IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN IN GRAY FOR REFERENCE PURPOSES. SEE PSH 46 (PERMIT DRAWING SHEET 154 OF 167) FOR PERMANENT ALIGNMENT IMPACTS.

100' 0' 100' 200' 300'
GRAPHIC SCALE

SEE SHEETS 3D-1THRU 3D-2 FOR DRAINAGE DITCH DETAILS

SITE 45A

11/4/2018
mgberry
R:\Hydraulics \PERMITS_Environmental\ Drawings\ Wetland & Stream\r-1015_Hyd_prm_wet_PSH2B-6.dgn
$$$$$$$$SYSTIME $$$$$$
$$$$$$$$USERNAME $$$$$$
$$$$$$$$DGN$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brock E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 15 OF 167

REVISIONS

7/13/2018 - PARCEL 1 - REVISED R/W, EXTENDED BACK TO STATION 30+50.00 LT AND RT
10/29/18 - PARCEL 1 - ADDED PUE -L- RT. STA. 41+27.00 TO STA. 44+00.00

8/17/99

$$$$$$$SYSTIME$$$$$$
$$$$$$$

8/17/99

REVISIONS

7/13/2018 - PARCEL 1 - REVISED R/W, EXTENDED BACK TO STATION 30+50.00 LT AND RT
10/29/18 - PARCEL 1 - ADDED PUE -L- RT. STA. 41+27.00 TO STA. 44+00.00

$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$
$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 16 OF 167

-L-
PI Sta 33+69.33
Δ = 17° 46' 26.7" (RT)
D = 3° 19' 35.2"
L = 534.33'
T = 269.33'
R = 1722.44'
SE = 0.08
RO = 320.00'
DS = 60 mph

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NAD 83

-L- PC Sta. 31+00.00

BEGIN WW FENCE

SPECIAL CUT 8' BASE DITCH SEE DETAIL A

2 @ 36" RCP-V BURIED 1.0 FT

REMOVE SYSTEM

15" RCP-IV

2CI

FIBER BOOM TIP

BEGIN TIP PROJECT R-1015
BEGIN CONSTRUCTION
-L- POC STA 32+80.83

BEGIN WW FENCE

SPECIAL CUT 8' BASE DITCH SEE DETAIL RRR

-L- PT Sta. 36+34.33

N 0° 26' 50" E

SPECIAL CUT 8' BASE DITCH SEE DETAIL A

SPECIAL CUT 8' BASE DITCH SEE DETAIL RRR

PUE

Q10 = 26cfs
V10 = 1.1fps

MATCH LINE STA.44+00 SEE SHEET 5

SITE 1

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES EXCAVATION IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

1

PROJECT REFERENCE NO.	SHEET NO.
R-1015	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brock E. Anderson

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4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 17 OF 167

REVISIONS
10/29/18 - PARCEL 1 - ADEDED PUE -L- RT STA.44+00.00 TO STA.58+00.00

8/17/99

$$$$$$$SYSTIME$$$$$
$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brook E. Anderson

moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No. F-0105

PERMIT DRAWING
SHEET 18 OF 167

8/17/99

REVISIONS

10/29/18 - PARCEL 1 - ADDED PUE -L- RT STA.44+00.00 TO STA.58+00.00

$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$LEVEL$$$$$$$$
$$$$$$$$DGN$$$$$$$$
$$$$$$$$FILENAME$$$$$$$$

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

(1)

NAD 83

45 50 55

-L- PC Sta. 47+82.02

POWER TRANSMISSION EASEMENT

MATCH LINE STA.44+00 SEE SHEET 4

MATCH LINE STA.58+00 SEE SHEET 6

N 0°26'50" E

15" RCP-IV

2GI

SPECIAL CUT 8' BASE DITCH
SEE DETAIL A

SEE DETAIL B

SEE DETAIL B

CL B RIP RAP
EST. 3 TONS
EST. 10 SY GF

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

SPECIAL CUT 8' BASE DITCH
SEE DETAIL RRR

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

PUE

Q10 = 26cfs
V10 = 1.1 fps

Q10 = 26cfs
V10 = 1.1 fps

W90

SITE 1

SITE 2

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

(1)

50' 0' 50' 100' 150'
GRAPHIC SCALE

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-6

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 19 OF 167

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

40 30 20

50+00.00

0.060 6:1 6:1 0.060 3:1 3:1 3:1 3:1

49+50.00

0.060 6:1 6:1 0.060 3:1 3:1 3:1 3:1

49+00.00

0.060 6:1 6:1 0.060 3:1 3:1 3:1 3:1

48+50.00

0.054 6:1 6:1 0.054 3:1 3:1 3:1 3:1

48+00.00

0.044 6:1 6:1 0.044 3:1 3:1 3:1 3:1

47+50.00

0.034 6:1 6:1 0.034 3:1 3:1 3:1 3:1

WLB

—4—

8/2018
mgberry
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$$$$$$$$SYSTIME$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

PERMIT DRAWING SHEET 20 OF 167

REVISIONS

10/29/18 - PARCEL 1 - ADDED PUE -L- RT STA.58+00.00 TO STA.72+00.00

8/17/99

NAD 83

SITE 3

MECH. CLEARING

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

POWER TRANSMISSION EASEMENT

POWER TRANSMISSION EASEMENT

CARTERET COUNTY
CRAVEN COUNTY

MATCH LINE STA. 58+00 SEE SHEET 5

-RPIB- ST Sta. 0+00.00 =
-L- POC Sta. 64+74.20

-RPIB- SC Sta. 2+34.00

-L- PT Sta. 67+84.73

MATCH LINE -RPIB- SEE SHEET 7

MATCH LINE STA. 72+00 SEE SHEET 7 STA. 7+20

CHORD

CHORD

CL B RIP RAP
EST. 5 TONS
EST. 14 SY GF

SPECIAL CUT 8' BASE DITCH
SEE DETAIL A

REMOVE SYSTEM

24" RCP III

REMOVE

18" CONC W/FES

18" CONC W/FES

-RPIB-

N 37° 34' 25" W

-L-

REMOVE SYSTEM

6' CONC HW

2GI-D

15" RCP-IV

FS

SEE DETAIL B

2GI-D

2GI-D

15" RCP-IV

15" RCP-IV

FS

SEE DETAIL B

2GI-D

REMOVE

18" CONC W/FES

PUE

FILL IN WETLANDS

EXCAVATION

SPECIAL CUT 8' BASE DITCH
SEE DETAIL RRR

SITE 2

EXCAVATION

FILL IN WETLANDS

CARTERET COUNTY
CRAVEN COUNTY

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

50' 0' 50' 100' 150'
GRAPHIC SCALE

(1) DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$CELLNAME$$$$

11/14/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_hyd_prm_wet_psh6.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-1015	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

PERMIT DRAWING SHEET 21 OF 167

8/17/99

REVISIONS

10/29/18 - PARCEL 1 - ADDED PUE -L- RT STA.58+00.00 TO STA.72+00.00

NAD 83

POWER TRANSMISSION EASEMENT

POWER TRANSMISSION EASEMENT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

CARTERET COUNTY
CRAVEN COUNTY

60

65

-RPIB- ST Sta. 0+00.00 = -L- POC Sta. 64+74.20

-RPIB- SC Sta. 2+34.00

-RPIB- PT Sta. 67+84.73

SITE 3

MECH. CLEARING

MATCH LINE -RPIB- SEE SHEET 7 STA. 7+20.00

MATCH LINE -L- STA. 58+00.00 SEE SHEET 5

MATCH LINE STA. 72+00.00 SEE SHEET 7

CL B RIP RAP
EST. 5 TONS
EST. 14.5Y GF

SPECIAL CUT 8' BASE DITCH
SEE DETAIL A

CHORD

REMOVE SYSTEM

24" RCP III

18" CONC W/FES

-RPIB-

N 37° 34' 25.1" W

2GI-D

FS
SEE DETAIL B

15" RCP IV

REMOVE SYSTEM

PUE

FILL IN WETLANDS

EXCAVATION

SPECIAL CUT 8' BASE DITCH
SEE DETAIL RRR

SITE 2

CARTERET COUNTY
CRAVEN COUNTY

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

50' 0' 50' 100' 150'
GRAPHIC SCALE

(1) DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

11/14/2018
mgberry
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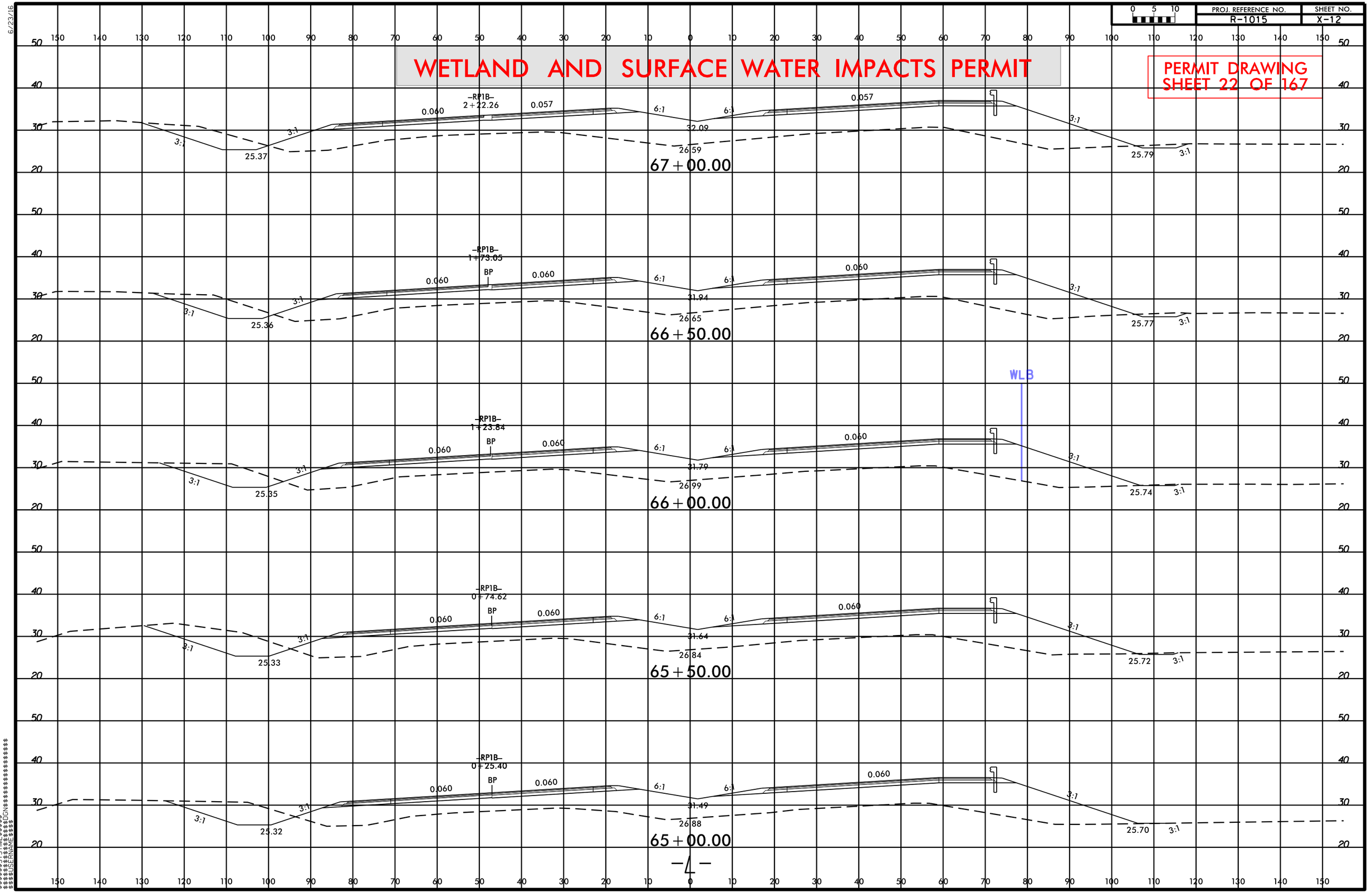
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-12

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 22 OF 167



8/2018
mgberry
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REVISIONS

PROJECT REFERENCE NO. R-105 | SHEET NO. 7 | R/W SHEET NO.

ROADWAY DESIGN ENGINEER — SEAL 015869 — NORTH CAROLINA PROFESSIONAL ENGINEER

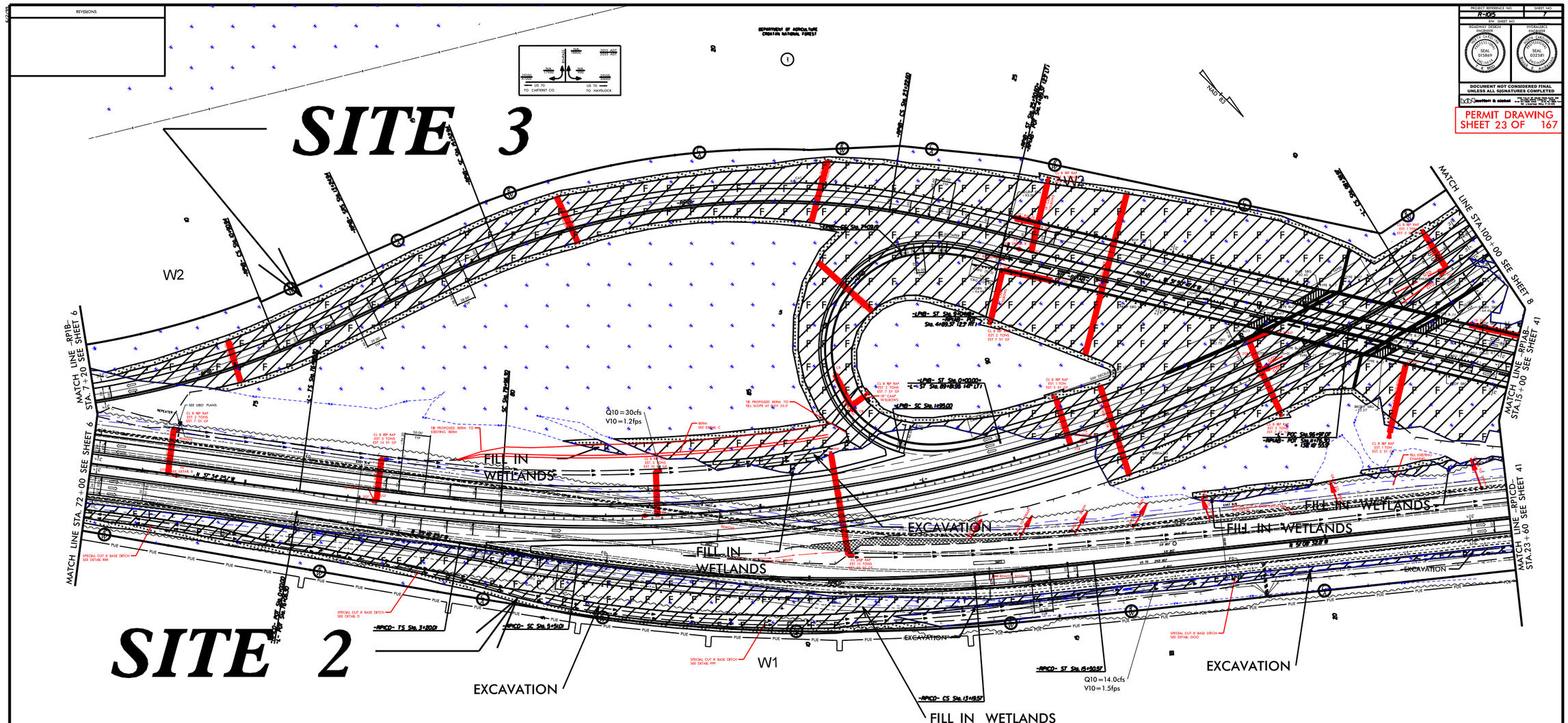
HYDRAULICS ENGINEER — SEAL 032581 — NORTH CAROLINA PROFESSIONAL ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 23 OF 167

SITE 3

SITE 2



E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SEE SHEETS 5I AND 52 FOR PROFILE -L-
SEE SHEET 71 AND 72 FOR PROFILE -RPIB-
SEE SHEET 72 FOR PROFILE -RPIAB-
SEE SHEET 76 FOR PROFILE -RPICD-
SEE SHEET 77 FOR PROFILE -LPIB-
SEE SHEET 2B-7 SKETCH 1 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION: US 70 (HAVELOCK BYPASS) FROM SOUTH OF SR 1172 (CARDINAL PINES BLVD) TO SOUTH OF SR 1174 (CAROLINA PINES BLVD)
TIP NO.: R-2015 COUNTY: CRAVEN
DESIGNED BY: DGM
CHECKED BY: TRR DATE: 6/19/2018

REVISIONS

SITE 3

SITE 2

MATCH LINE -RPIB- STA. 7+20 SEE SHEET 6

MATCH LINE STA. 72+00 SEE SHEET 6

MATCH LINE STA.100+00 SEE SHEET 8

MATCH LINE -RPIAB- STA.13+00 SEE SHEET 41

MATCH LINE -RPICD- STA.23+60 SEE SHEET 41

W1

W2

FILL IN WETLANDS

EXCAVATION

Q10 = 30cfs
V10 = 1.2fps

Q10 = 14.0cfs
V10 = 1.5fps

-RPCD- TS Sta. 3+20.0

-RPCD- SC Sta. 5+51.0

-RPCD- CS Sta. 13+49.57

-RPCD- ST Sta. 15+50.57

-LPAB- ST Sta. 0+00.00
-L- ST Sta. 89+18.58 NP DT1

-LPAB- SC Sta. 1+95.00

-L- PTC Sta. 95+87.07
-RPIAB- POT Sta. 97+15.97

-RPAB- ST Sta. 0+00.00

-RPAB- SC Sta. 2+57.16

-RPAB- CS Sta. 5+21.20

-RPAB- ST Sta. 7+36.20

-RPAB- ST Sta. 8+57.29

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

US 70 — TO CARTERET CO.
US 70 — TO HAVELOCK

E / E — DENOTES EXCAVATION IN WETLAND

F / F — DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SEE SHEETS 5I AND 5S FOR PROFILE -L-
SEE SHEET 7I AND 7Z FOR PROFILE -RPIB-
SEE SHEET 7Z FOR PROFILE -RPIAB-
SEE SHEET 7S FOR PROFILE -RPICD-
SEE SHEET 7T FOR PROFILE -LPIB-
SEE SHEET 28-7 SKETCH I FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 20-1THRU 20-2 FOR DRAINAGE DITCH DETAILS

PROJECT REFERENCE NO. R-4015 — SHEET NO. 7
R/W SHEET NO.

ROADWAY DESIGN ENGINEER — SEAL 015869
HYDRAULICS ENGINEER — SEAL 032581

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 24 OF 167

LOCATION: US 70 (HAVELOCK BYPASS) FROM SOUTH OF CARTERET/CRAVEN COUNTY LINE TO SOUTH OF SR 1176 (CAROLINA PINES BLVD)

TIP NO. R-4015 — COUNTY: CRAVEN

DESIGNED BY: DGH

CHECKED BY: TRB — DATE: 6/19/2018

GRAPHIC SCALE
50 25 0 50 100
PLANS

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-1015	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 25 OF 167

SITE 3

NAD 83

BM5

100 105 110

-L- ST Sta.102+28.97

CHORD

MATCH LINE STA.100+00 SEE SHEET 7

MATCH LINE STA.114+00 SEE SHEET 9

GREU-TC3

BL-2

BL-3

-L-

N 79°57'36.8" W

SEE DETAIL B

-RP1A-

W2

-RP1A- CS Sta. 7+86.56

-RP1A- ST Sta. 9+86.56 =
-L- POT Sta. 106+83.84

CHORD

CL B RIP RAP
EST. 1 TON
EST. 5 SY GEO

MATCH LINE -RP1A-
STA. 4+00 SEE SHEET 41

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

11/14/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh8.dgn

$$$$SYSTIME $$$$
$$$$SYSDGN $$$$
$$$$USERNAME $$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brock E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 26 OF 167

REVISIONS 8/17/99

SITE 3

NAD 83

BM5

100 105 110

-L- ST Sta. 102+28.97

CHORD

MATCH LINE STA.100+00 SEE SHEET 7

MATCH LINE STA.114+00 SEE SHEET 9

CREU-TC3

SILT FENCE FOR OUTLET

SILT FENCE FOR OUTLET

BL-2

BL-3

-L-

SEE DETAIL B

N 79°57'36.8" W

-RP1A-

W2

CHORD

-RP1A- CS Sta. 7+86.56

-RP1A- ST Sta. 9+86.56
-L- POT Sta. 106+83.84

CL B RIP RAP, TYP 1, 1 TON, 150.0 SY

SILT CHECK TYPE B

SILT CHECK TYPE IV

MATCH LINE -RP1A-
STA. 4+00 SEE SHEET 41

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

11/14/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh8.dgn

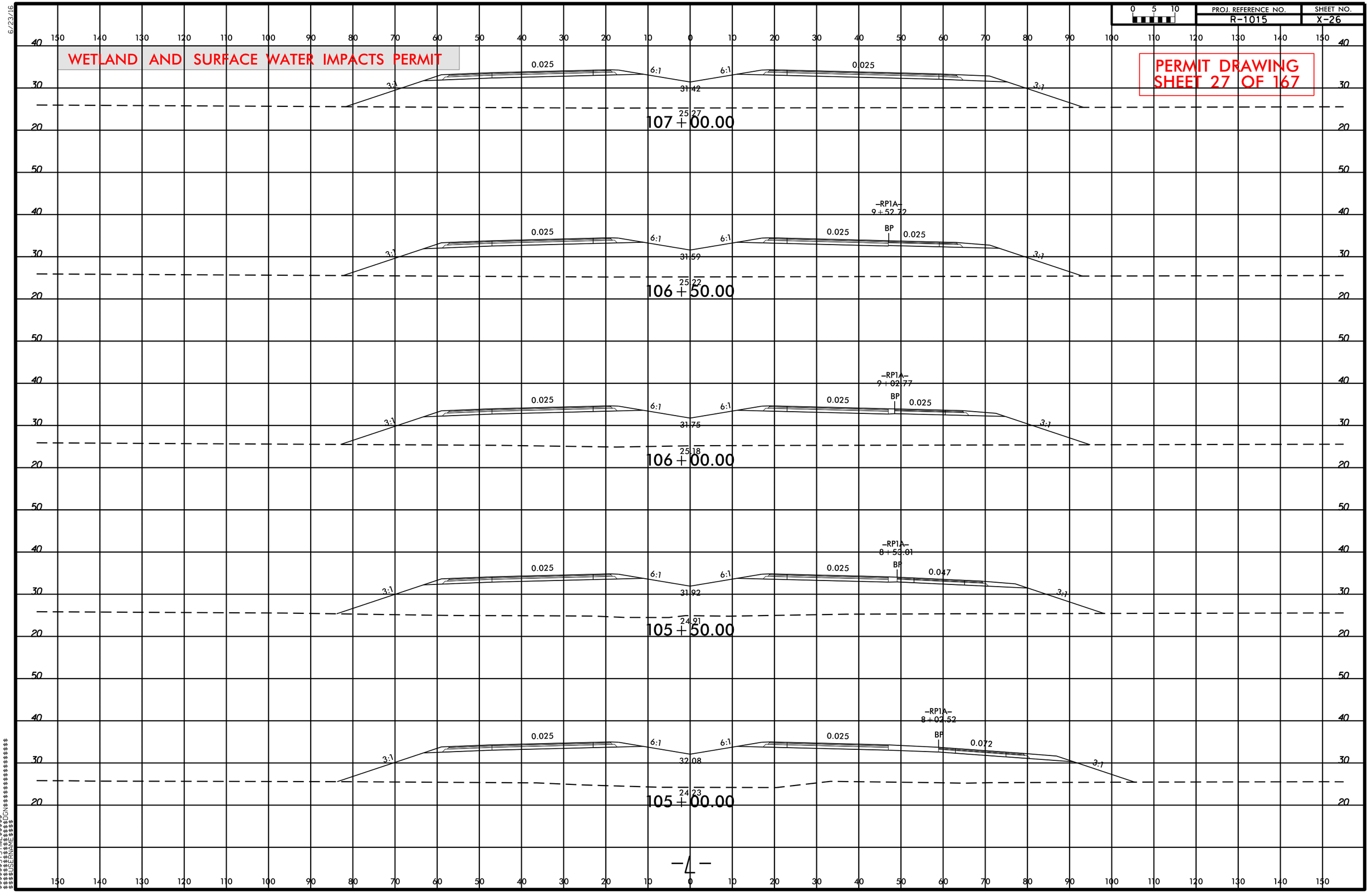
$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-26

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 27 OF 167



$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 28 OF 167

REVISIONS

8/17/99

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

(1)

NAD 83

POWER TRANSMISSION EASEMENT

200'

115 120 125

PUE PUE PUE

SITE 4

MATCH LINE STA.114+00 SEE SHEET 8

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

15" CAAP W/ELBOWS

TB 2GI

15" RCP-IV

FS SEE DETAIL B

24" RCP-IV

18" RCP-IV

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

-L- N 79°57' 36.8" W

CL B RIP RAP EST. 1 TON EST. 5 SY GF

15" CAAP W/ELBOWS

TB 2GI

CL B RIP RAP EST. 1 TON EST. 5 SY GF

15" CAAP W/ELBOWS

TB 2GI

-L- TS Sta. 127+38.75

MATCH LINE STA.128+00 SEE SHEET 10

SITE 3

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

(1)

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

$$$$$$$SYSTIME$$$$$$
$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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PERMIT DRAWING
SHEET 29 OF 167

REVISIONS

8/17/99

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

POWER TRANSMISSION EASEMENT

CP&L R/W

115 120 125

NAD 83

SITE 4

PUE PUE PUE

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

15" CAAP W/ELBOWS

TB 2GI

MATCH LINE STA.114+00 SEE SHEET 8

MATCH LINE STA.128+00 SEE SHEET 10

-L- N 79°57' 36.8" W

-L- TS Sta. 127+38.75

SITE 3

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh9.dgn

$$$$$$SYSTIME$$$$$$
$$$$$$DGNS$$$$$$
$$$$$$USERNAME$$$$$$

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-1015	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brook E. Anderson

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919 781-4626 VOICE 919 781-4869 FAX
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PERMIT DRAWING
SHEET 30 OF 167

CROATAN NATIONAL FOREST

1

2

NAD 83

SITE 4

SITE 5

SITE 6

130

155

140

CHORD

EXIST RR R/W

HAND CLEARING

FILL IN WETLANDS

ATLANTIC & EAST CAROLINA RR

-L- STA 138+31.09

C= STANDARD 12' MASS DITCH W/CLASS I RIP RAP
SEE DETAIL E
S=0.006 FT/FT
DITCH = 590 CY
CLASS I RIP=560 TONS

EXCAVATION

FILL EXISTING DITCH TO NATURAL GROUND

MATCH LINE STA. 128+00 SEE SHEET 9

MATCH LINE STA. 142+00 SEE SHEET 11

-L- TS Sta. 127+3.

-L- SC Sta. 130+34.75

36" RCP-IV EQUALIZER

FS SEE DETAIL B

TB 2GI

15" RCP-IV

18" CAAP W/ELBOWS

15" CAAP W/ELBOWS

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

FINAL R/W

W3

W4 Q10 = 223cfs V10 = 2.5fps

W5

POWER TRANSMISSION EASEMENT

E E DENOTES EXCAVATION IN WETLAND

HC HC DENOTES HAND CLEARING

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$CELNAME$$$$
$$$$

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-1015	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

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NC License No.: F-0105

PERMIT DRAWING
SHEET 31 OF 167

SITE 4

SITE 5

SITE 6

CROATAN NATIONAL FOREST

CROATAN NATIONAL FOREST

NAD 83

MATCH LINE STA. 128+00 SEE SHEET 9

MATCH LINE STA. 142+00 SEE SHEET 11

-L- TS Sta. 127+73

-L- SC Sta. 130+34.75

-L- STA 138+31.09

CHORD

CHORD

EXIST RR R/W

HAND CLEARING

FILL IN WETLANDS

FILL IN WETLANDS

EXCAVATION

HAND CLEARING

FILL EXISTING DITCH TO NATURAL GROUND

POWER TRANSMISSION EASEMENT

36" RCP IV EQUIVALENT

18" CAMP WELBOWS

15" CAMP WELBOWS

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

FS SEE DETAIL B

TB 2GI

15" RCP IV

18" RCP IV

STANDARD 18" MASONRY WEIRCLASS I IN RAR SEE DETAIL E S=0.00 FT/FT DISCHARGE=60 CFS CLASS I n=.560 TONS

W3

W4 Q10 = 223cfs V10 = 2.5fps

W5

DENOTES EXCAVATION IN WETLAND

DENOTES HAND CLEARING

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGNFILE$$$$
$$$$MODEL$$$$
$$$$LEVELS$$$$
$$$$DGNS$$$$$$$$$$$$$$$$$$$$

11/15/2018
mgberry
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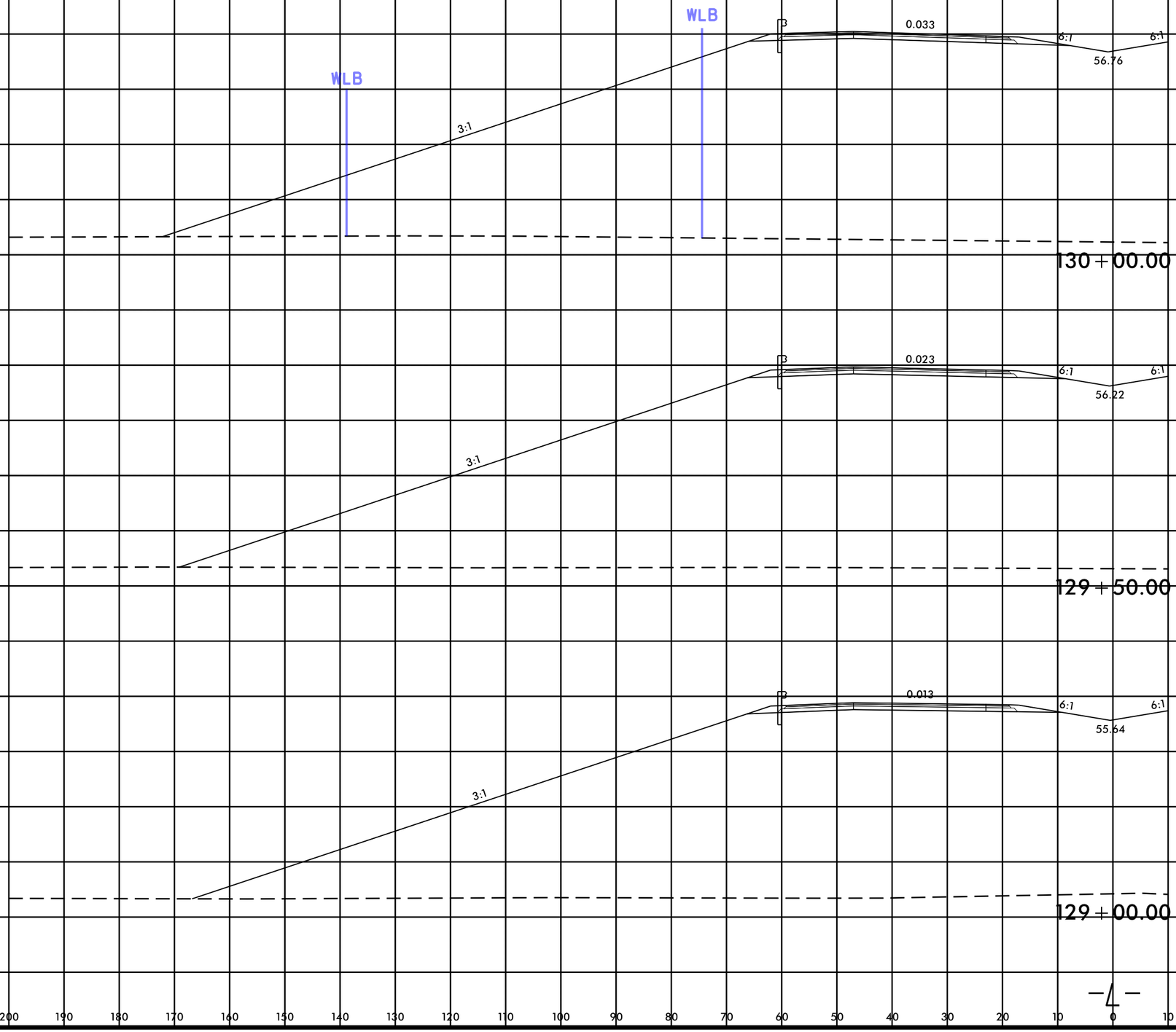
6/23/16

PROJ. REFERENCE NO. R-1015 | SHEET NO. X-37

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 32 OF 167



9/1/2016
mgoodwin
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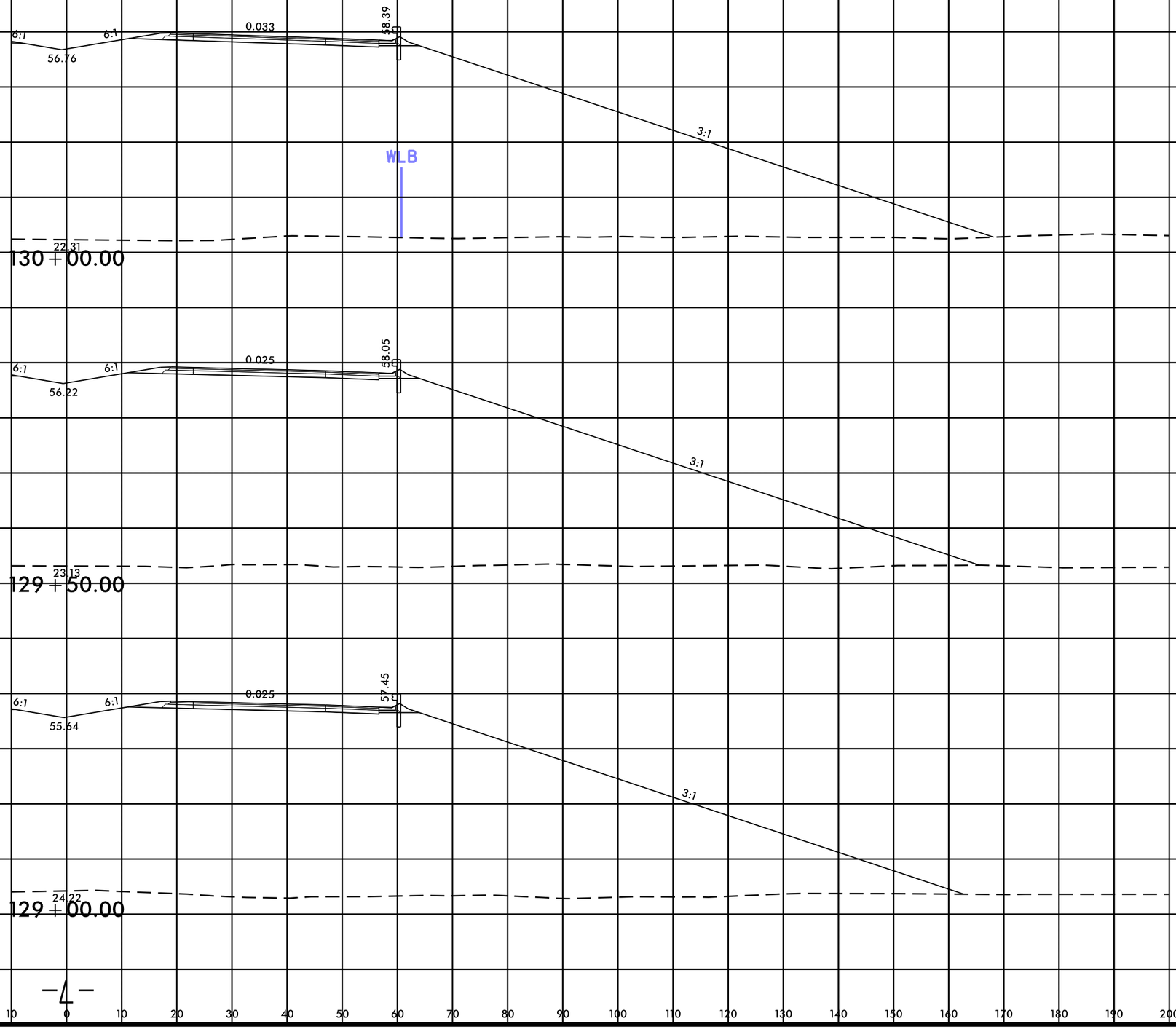
$$$$$$$SYSDATE$$$$$
$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-44

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 33 OF 167



8/1/2018
mgberry
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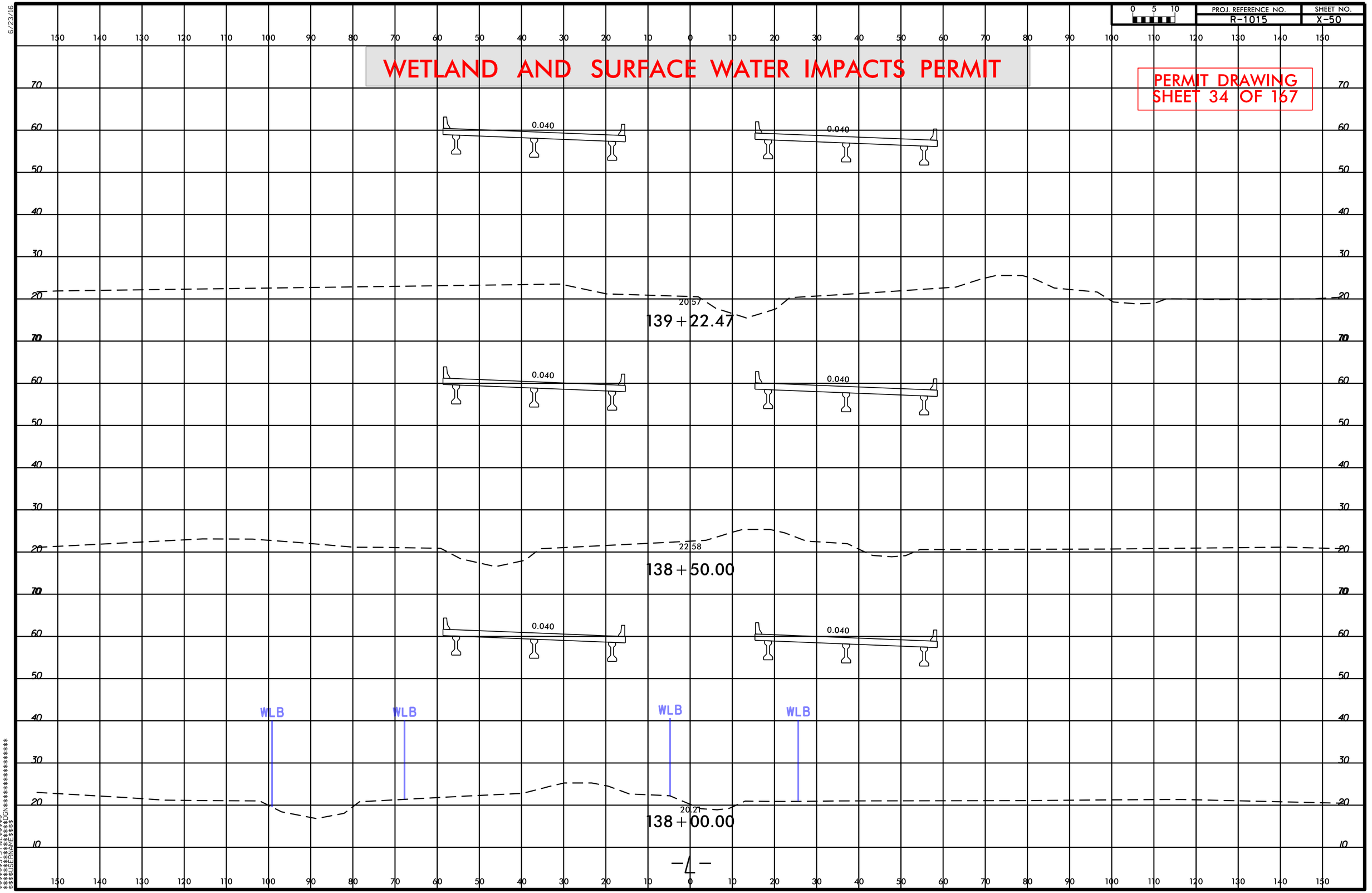
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-50

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 34 OF 167



8/1/2018
mgbarry
R:\Hydraulics\PERMITS_Environmental\Drawings\XPL\R1015_Hyd_XPL_5.dgn
$$$$$$$$SYSTIME$$$$$
$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	11
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T R REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E Anderson

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919 781-4626 VOICE 919 781-4869 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 35 OF 167

REVISIONS

8/17/99 –

7/13/2018 – PARCEL 2 = REVISED PDE AT G3B -L- 155+00 RT
PARCEL 2 = CHANGED PDE TO TCE AND REVISED AREA AT G3A -L- STATION 154+00 LT
PARCEL 2 = ADDED TCE STATION -L- 150+31 TO 152+50 RT

SITE 6

MATCH LINE STA.142+00 SEE SHEET 10

MATCH LINE STA.156+00 SEE SHEET 12

-L- CS Sta.143+88.78

-L- ST Sta.146+84.78

W6

145 150 155

NAD 83

WOODS

CHORD

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL I RIP RAP EST. 15 TONS EST. 30 SY GF

15" RCP-IV

18" RCP-IV

36" RCP-IV

15" CAAP W/ELBOWS

18" CAAP W/ELBOWS

TB 2GI

2GI

FS SEE DETAIL B

-L-

N 63° 29' 33.7" W

BL-22

BL-23

MAINTAIN EXIST. CHANNEL

HW

TIE PROP. DITCH TO EXISTING DITCH

LATERAL 'V' DITCH SEE DETAIL F DDE = 346 CY

PDE

BM8

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

(2)

3X ENLARGEMENT

SITE 7

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

$$$$$SYSTIME$$$$$
$$$$$DGN$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	11
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 015869 T. R. REID

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032581 Brook E. Anderson

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NC License No. F-0105

PERMIT DRAWING SHEET 36 OF 167

REVISIONS

7/13/2018 – PARCEL 2 – REVISED PDE AT G3B -L- I55+00 RT
PARCEL 2 – CHANGED PDE TO DDE AND REVISED AREA AT G3A -L- STATION I54+00 LT
PARCEL 2 – ADDED TCE STATION -L- I50+31 TO I52+50 RT

8/17/99

SITE 6

MATCH LINE STA.142+00 SEE SHEET 10

MATCH LINE STA.156+00 SEE SHEET 12

-L- CS Sta.143+88.78

-L- ST Sta.146+84.78

W6

CHORD

N 63° 29' 33.7" W

-L-

BL-22

BL-23

WOODS

145

150

155

50.00' TYP

94.76'

15" RCP-IV

18" RCP-IV

24" RCP-IV

2GI

TB 2GI

FS SEE DETAIL B

15" CAAP W/ELBOWS

18" CAAP W/ELBOWS

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL I RIP RAP EST. 15 TONS EST. 30 SY GF

MAINTAIN EXIST. CHANNEL

TIE PROP. DITCH TO EXISTING DITCH

LATERAL 'V' DITCH SEE DETAIL F DDE = 346 CY

BM8

PDE

DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST

SITE 7

3X ENLARGEMENT

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland_&_Stream\R1015_Hyd_prm_wet_psh11.dgn

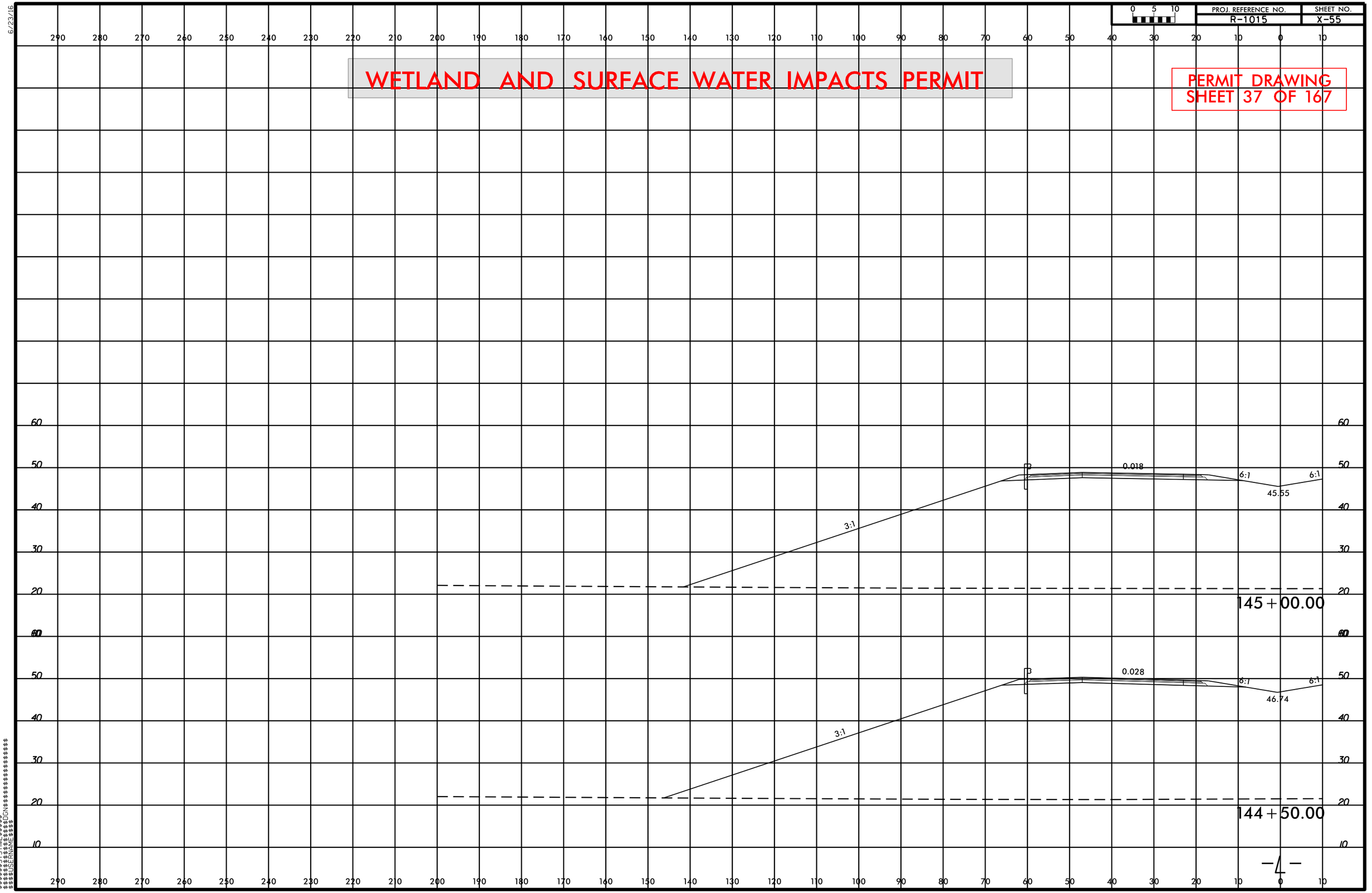
$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-55

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 37 OF 167



9/2/2018
mmoore
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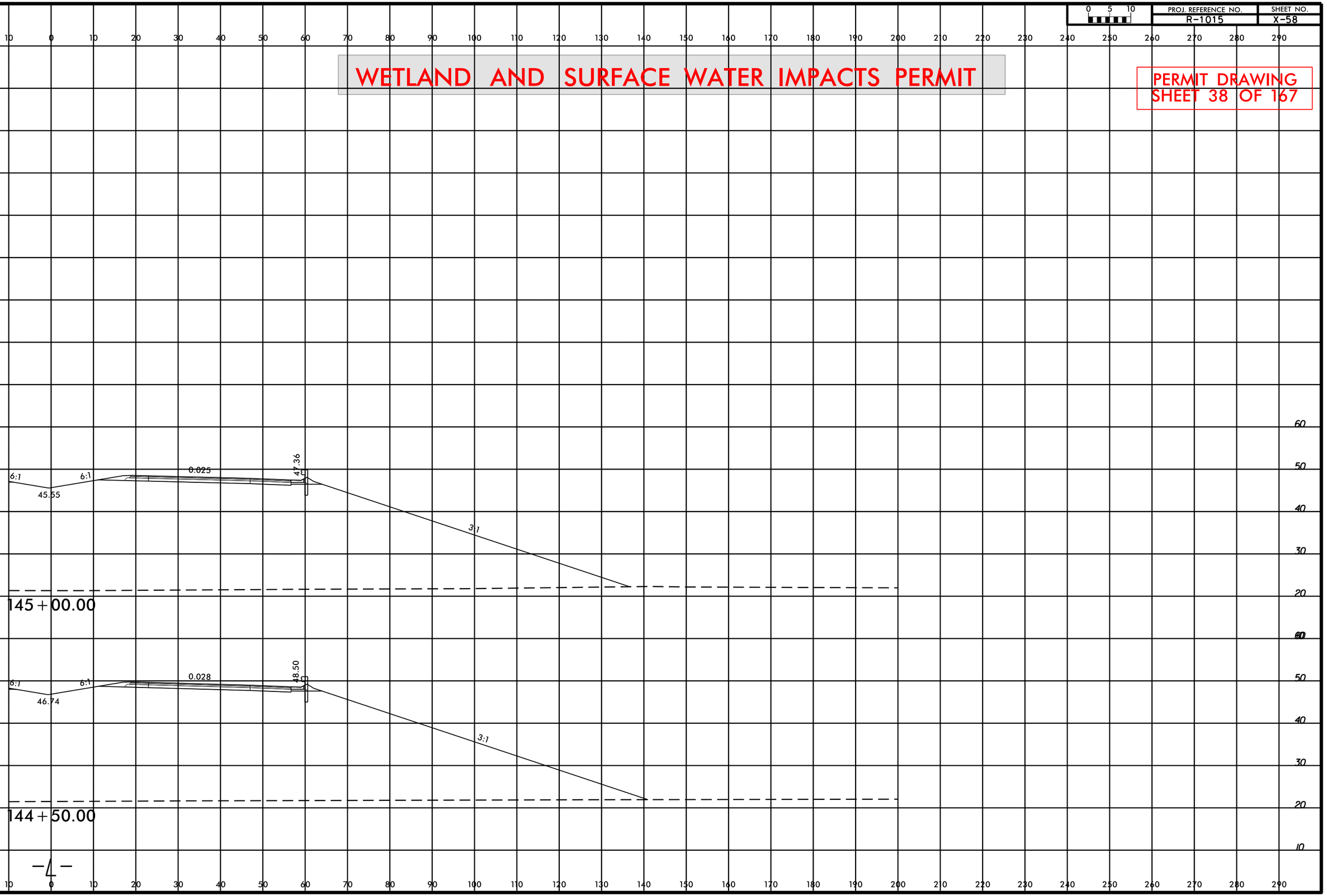
$$$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-58

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 38 OF 167



9/1/2018
mmoore
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$$$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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RALEIGH, NORTH CAROLINA 27609
919 781 4626 VOICE 919 781 4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 39 OF 167

REVISIONS
8/17/99
7/13/2018 - PARCEL 2 - ADDED TDE STATION -L- 165+40 TO 170+00 RT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

160

165

SITE 7

SITE 8

SITE 9

W7

W7

MATCH LINE STA.156+00 SEE SHEET 11

MATCH LINE STA. 170+00 SEE SHEET 13

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

CL B RIP RAP
EST. 3 TONS
EST. 10 SY GF

CLASS II RIP RAP
PDE

TDE

15" CAAP W/ELBOWS

18" CAAP W/ELBOWS

TB 2GI

15" RCP-IV

18" RCP-IV

MEDIAN 'V' DITCH
SEE DETAIL NN

LATERAL 'V' DITCH
SEE DETAIL H
DDE = 15 CY

N 63° 29' 33.7" W

WOODS

POWERLINE EASEMENT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

50' 0' 50' 100' 150'
GRAPHIC SCALE

WORK BRIDGE

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

SEE SHEET 54 FOR PROFILE -L-
SEE SHEET 2B-7 SKETCH 3 FOR PROPOSED BRIDGE SKETCH
SEE SHEET 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh12.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-1015	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

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PERMIT DRAWING SHEET 40 OF 167

REVISIONS

7/13/2018 - PARCEL 2 - ADDED TDE STATION -L- 165+40 TO 170+00 RT

8/17/99

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

160

165

SITE 7

SITE 8

SITE 9

W7

W7

MATCH LINE STA.156+00 SEE SHEET 11

MATCH LINE STA. 170+00 SEE SHEET 13

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CLASS II RIP RAP PDE

15" CAAP W/ELBOWS

18" CAAP W/ELBOWS

TB 2GI

TDE

PDE

WOODS

MEDIAN 'V' DITCH SEE DETAIL NN

15" RCP-IV

18" RCP-IV

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL B RIP RAP EST. 3 TONS EST. 10 SY GF

LATERAL 'V' DITCH SEE DETAIL H DDE = 15 CY

POWERLINE EASEMENT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

50' 0' 50' 100' 150'
GRAPHIC SCALE

WORK BRIDGE

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

SEE SHEET 54 FOR PROFILE -L-

SEE SHEET 2B-7 SKETCH 3 FOR PROPOSED BRIDGE SKETCH

SEE SHEET 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

11/15/2018
mgberry
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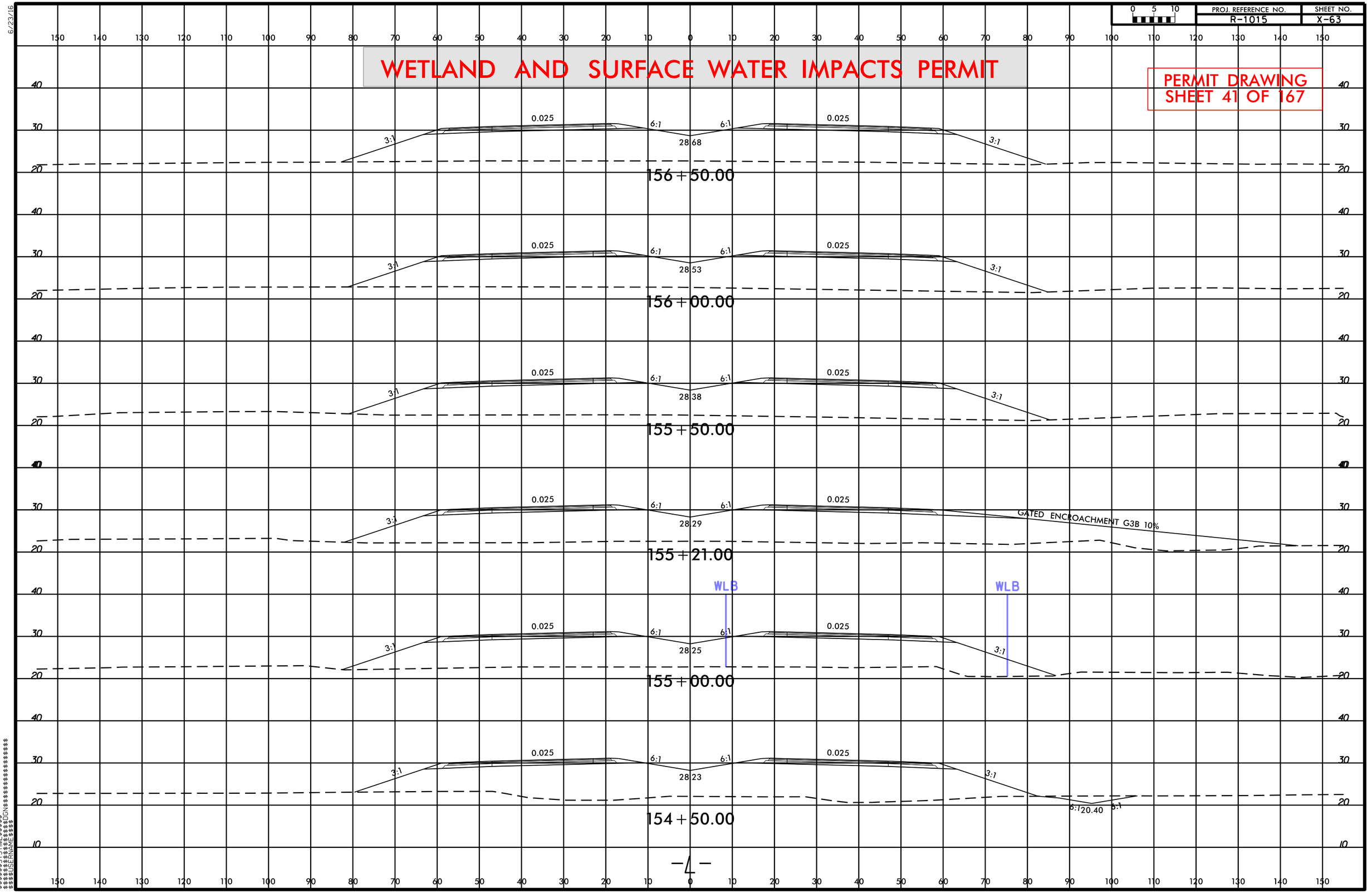
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-63

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 41 OF 167



8/7/2018
mmoore
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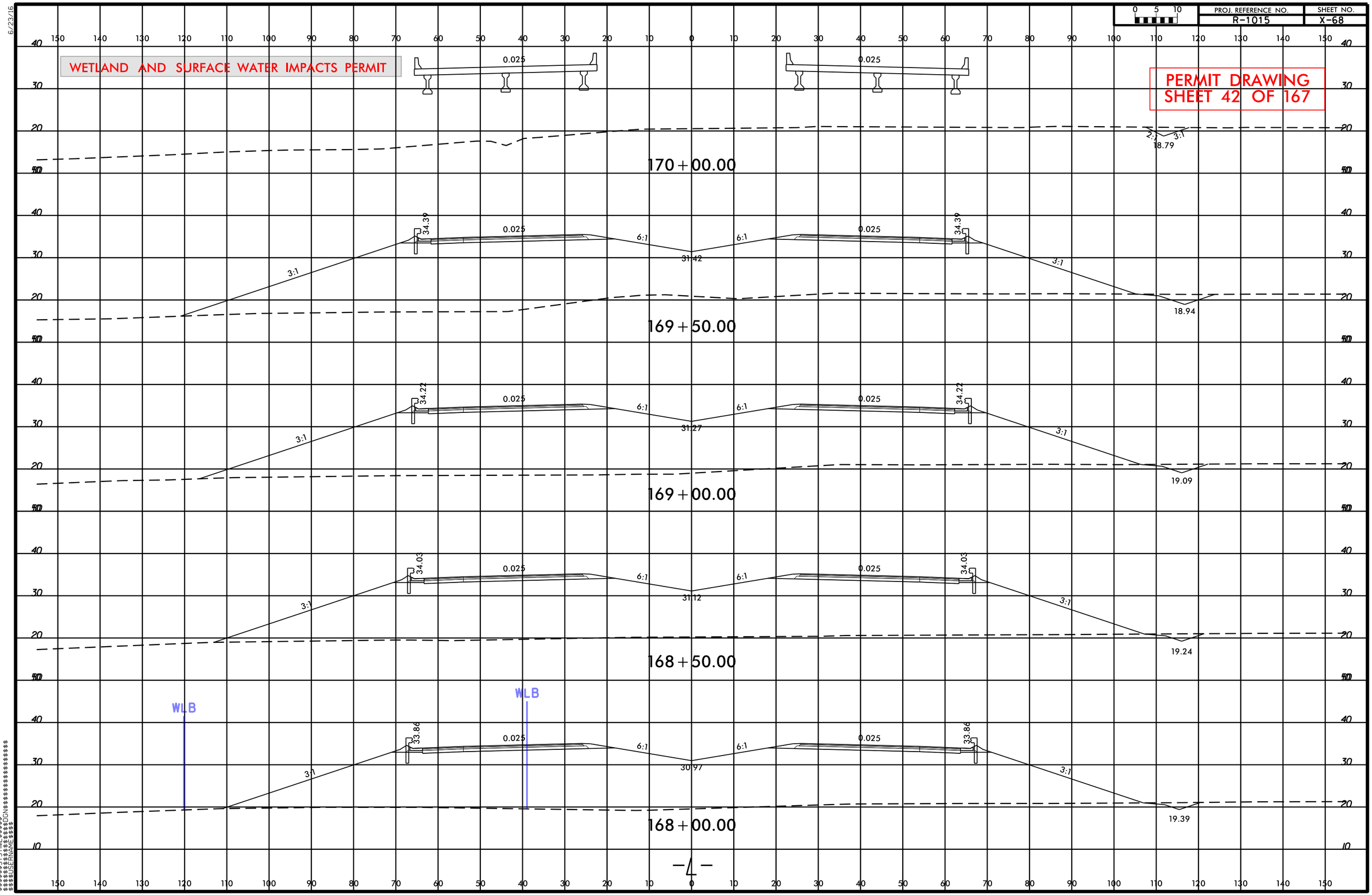
$$$$$$$USERNAME$$$$$
$$$$$$$SYSTIME$$$$$
$$$$$$$DGN$$$$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-68

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 42 OF 167



8/1/2018
mgkerry
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$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

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NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brook E. Anderson

moffatt & nichol
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DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

PERMIT DRAWING
SHEET 43 OF 167

SITE 9

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

DAVID T. ROWE, et ux
JAMES M. STALLINGS, et ux
3

170 175 180

MATCH LINE STA.170+00 SEE SHEET 12

MATCH LINE STA.184+00 SEE SHEET 14

-L- N 63° 29' 33.7" W

END WW FENCE

EASTERN RIGHT OF SLOCUM CREEK

WOODS

TIE PROP. DITCH TO NATURAL GROUND

DAVID T. ROWE, et ux

HC HC DENOTES HAND CLEARING

WORK BRIDGE

50' 0' 50' 100' 150'
GRAPHIC SCALE

REVISIONS
8/17/99
7/13/2018 - PARCEL 2 - ADDED TOE STATION -L- 170+00 TO 170+55 RT

11/5/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh13.dgn
$$$$USERNAME$$$$
$$$$SYSTIME$$$$
$$$$DGN$$$$

8/17/99

REVISIONS

7/13/2018 - PARCEL 2 - ADDED TOE STATION -L- 170+00 TO 170+55 RT

PROJECT REFERENCE NO.	SHEET NO.
R-1015	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brook E. Anderson

moffatt & nichol
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NC License No.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

PERMIT DRAWING
SHEET 44 OF 167

SITE 9

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

DAVID T. ROWE, et ux
JAMES M. STALLINGS, et ux
3

170 175 180

MATCH LINE STA.170+00 SEE SHEET 12

MATCH LINE STA.184+00 SEE SHEET 14

-L- N 63° 29' 33.7" W

END WW FENCE

TIE PROP DITCH TO\ NATURAL GROUND

WOODS

DAVID T. ROWE, et ux

HC HC DENOTES HAND CLEARING

WORK BRIDGE

50' 0' 50' 100' 150'
GRAPHIC SCALE

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh13.dgn

$$$$SYSTIME$$$$
$$$$DGN$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 45 OF 167

60 50 40 30 20 10 0 –10 –20

158+00 159+00 160+00 161+00 162+00 163+00 164+00 165+00 166+00 167+00 168+00 169+00 170+00 171+00 172+00

36" RCP-IV EQUALIZER
-L- STA. 158+50 ELEV. = 21.66'

36" RCP-V EQUALIZER PIPE
-L- STA. 161+50 ELEV. = 22.15'

(-) 0.3000%

(+) 0.4360%

BEGIN DITCH
+23.00 RT
20.70

(-) 0.6772%

+52.00 RT
19.84'

(-) 0.3000%

2:1 SLOPES

CLASS II RIP RAP

(-) 0.3000%

END DITCH
+50.00 RT
18.62'

100 YR WS
EL = 17.27

NATURAL GROUND LEFT

70 60 50 40 30 20 10 0 –10

172+00 173+00 174+00 175+00 176+00 177+00 178+00 179+00 180+00 181+00 182+00 183+00 184+00 185+00 186+00

PI = 176+84.00
EL = 37.60'
K = 492
VC = 328'

(+)0.3007% (-)0.3665%

NWS
EL = 13.8

CLASS II RIP RAP

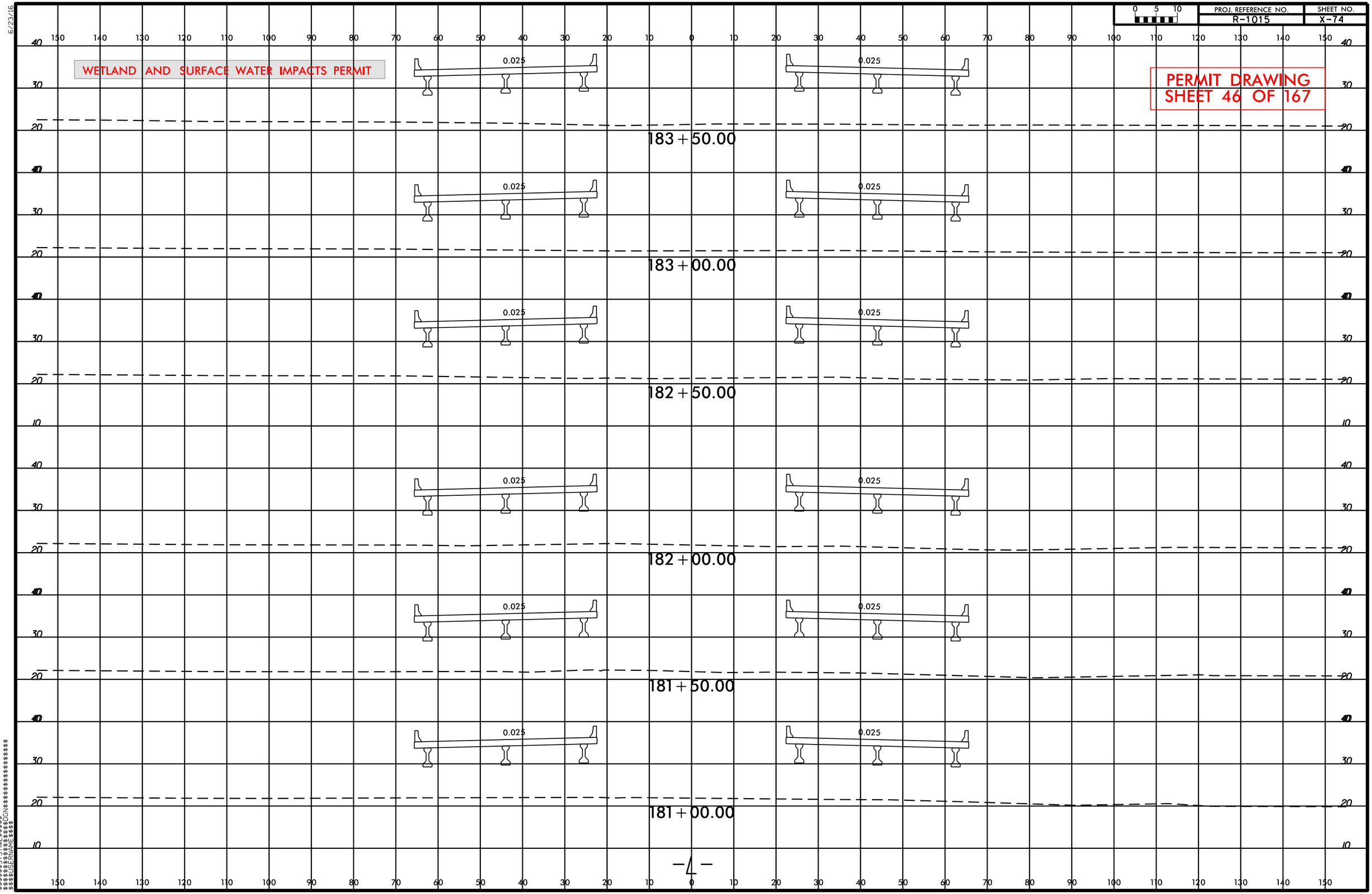
NATURAL GROUND RIGHT

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-74

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 46 OF 167



8/2/2018
mgkerry
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$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 47 OF 167

REVISIONS

7/13/2018 - PARCEL 2 = REMOVED TOE STATION -L- 190+75 TO 194+10 RT
REMOVED TOE STATION -L- 194+45 TO 195+75 LT
PARCEL 2 = ADDED TOE STATION -L- 196+70 TO 197+25 LT

8/17/99

SITE 9

MATCH LINE STA.184+00 SEE SHEET 13

MATCH LINE STA.198+00 SEE SHEET 15

185 190 195

NAD 83

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CLASS A RIP RAP

TYPE B-77

18" RCP-IV

TB 2GI

BEGIN WW FENCE

WOODS

GRFCL (TL-3) 8:1

2GI

15" RCP-IV

M 63° 29' 33" W -L-

SEE DETAIL B

CL B RIP RAP EST. 3 TONS EST. 11 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

15" CAMP WELDED WS

TOE

CL I RIP RAP EST. 26 TONS EST. 50 SY GF

SITE 10

WORK BRIDGE

HC HC DENOTES HAND CLEARING

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh14.dgn

$$$$$$SYSTIME$$$$$$
$$$$$$DGN$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 48 OF 167

REVISIONS

7/13/2018 - PARCEL 2 = REMOVED TDE STATION -L- 190+75 TO 191+10 RT
ADDED TDE STATION -L- 191+10 TO 191+55 RT
PARCEL 2 = ADDED TDE STATION -L- 195+70 TO 197+25 LT

8/17/99

185 190 195

MATCH LINE STA.184+00 SEE SHEET 13

MATCH LINE STA.198+00 SEE SHEET 15

SITE 9

SITE 10

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CLASS I RIP RAP

TYPE B-77

18" RCP-IV

TB 2GI

2GI

WOODS

TB 1GI

15" RCP-IV

TB 2GI

8:1

GRFL (TL-3)

25" RCP-IV

N 63°29' 33" W -L-

CL B RIP RAP EST. 3 TONS EST. 11 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

EST. TO WOODS

LF CLAY FENCE

SEE DETAIL B

15" CMP

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL I RIP RAP EST. 26 TONS EST. 50 SY GF

TDE

BEGIN WW FENCE

HC HC HC HC HC

F F F F F

WORK BRIDGE

DENOTES HAND CLEARING

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh14.dgn

$$$$$$SYSTIME$$$$$$
$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER — T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER — Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 49 OF 167

NAD 83

SITE 10

MECHANIZED CLEARING

CL B RIP RAP EST. 1 TON EST. 5 SY GF

15" CAAP W/ELBOWS

RCP

EQUALIZER

TB 2GI

WOODS

F

SEE DETAIL B

MATCH LINE STA. 198+00 SEE SHEET 14

MATCH LINE STA. 212+00 SEE SHEET 16

200 205 210

$L-$ N 63° 29' 33" W

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

REVISIONS 8/17/99

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh15.dgn
$$$$USERNAME$$$$ $$$$SYSTIME$$$$ $$$$DGN$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 50 OF 167

SITE 10

NAD 83

200 205 210

MECHANIZED CLEARING

CL B RIP RAP EST. 1 TON EST. 5 SY GF

15" CAAP W/ELBOWS

RCP

TB 2GI

WOODS

F

RW

CA

L- N 63° 29' 33" W

025

SEE DETAIL B

MATCH LINE STA. 198+00 SEE SHEET 14

MATCH LINE STA. 212+00 SEE SHEET 16

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

REVISIONS 8/17/99

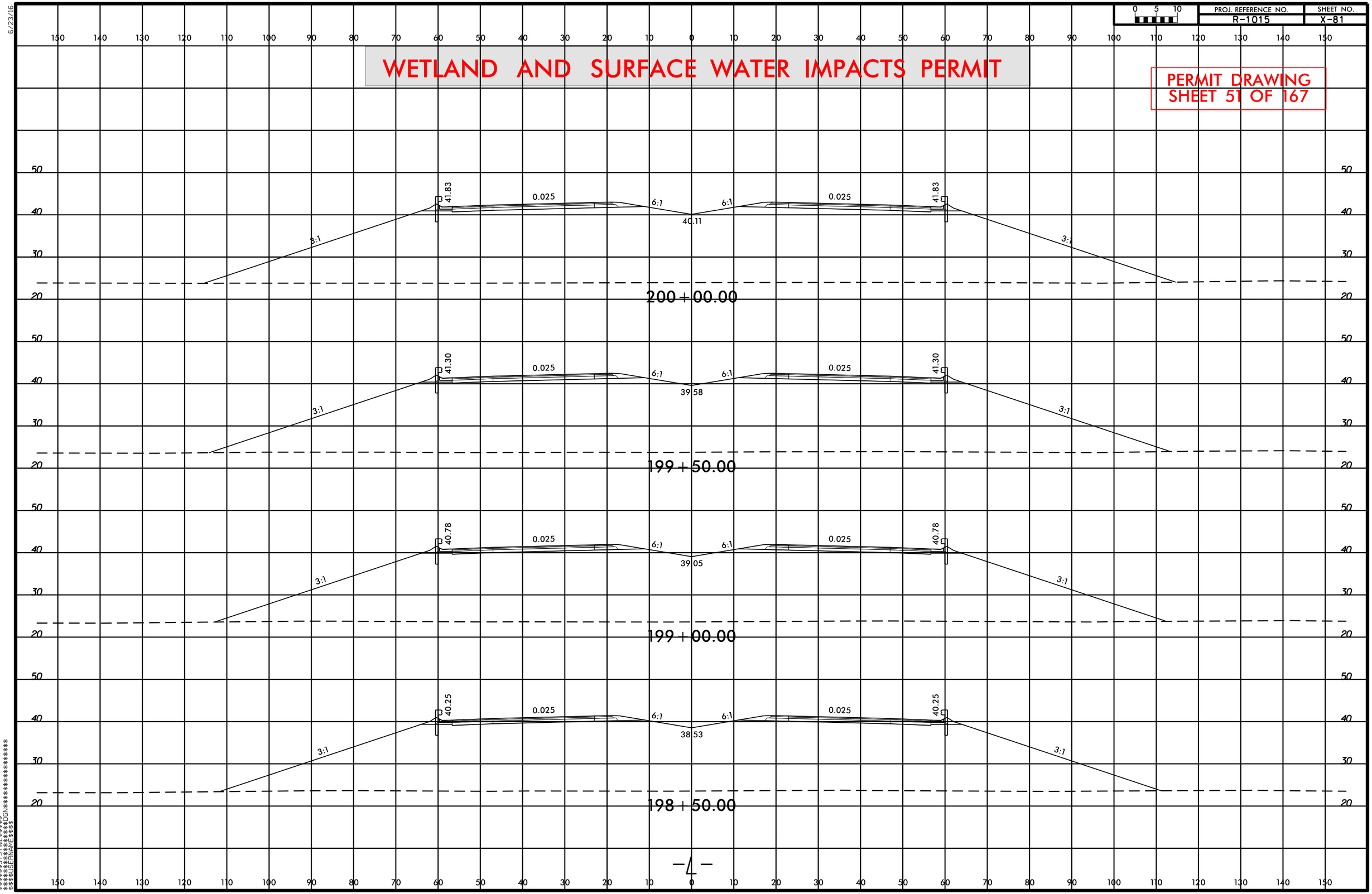
$$$$$SYSTIME$$$$$
$$$$$SYSTIME$$$$$
$$$$$SYSTIME$$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-81

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 51 OF 167



8/2/2018
mgberry
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$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	16
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T R REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E Anderson

PERMIT DRAWING SHEET 52 OF 167

5X ENLARGEMENT

NAD 83

SITE 11

SITE 12

W7

W8

215

220

225

WEYERHAEUSER CC
DB 1048 - PG .
4

MATCH LINE STA.212 + 00 SEE SHEET 15

MATCH LINE STA. 226 + 00 SEE SHEET 17

LATERAL 'V' DITCH
SEE DETAIL H
DDE = 144.1 CY

TIE PROP. DITCH TO EXIST. DITCH

Q10 = 4.0cfs
V10 = 1.2fps

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

15" CAAP W/ELBOWS

36" RCP-IV EQ/ADJUSTER

TB 2GI

WOODS

FS
SEE DETAIL B

2GI

15" RCP-IV

-L- N 63° 29' 33.7" W

BL-35

BL-36

65' GRVL RD

TOE PROTECTION
CLASS B RIP RAP
EST = 155 TONS
GT EST = 345 SY
SEE DETAIL J

MEDIAN 'V' DITCH
SEE DETAIL NN

N 61° 11' 33.7" W

-L- POT Sta. 225+06.00 =
-Y3RPC- POT Sta. 0+00.00 (47' RT)
Δ = 2° 18' 00"

DEPARTMENT OF AGRICULTURE

DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

REVISIONS

8/17/99

7/13/2018 - PARCEL 2 - ADDED TCE STATION -L- 209+30 TO 223+65 LT

$$$$$$SYSTIME$$$$$$
$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	16
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

PERMIT DRAWING SHEET 53 OF 167

REVISIONS

8/17/99

7/13/2018 - PARCEL 2 - ADDED TCE STATION -L- 209+30 TO 223+65 LT

5X ENLARGEMENT

NAD 83

SITE 11

SITE 12

MATCH LINE STA. 212+00 SEE SHEET 15

MATCH LINE STA. 226+00 SEE SHEET 17

215 220 225

WEYERHAEUSER CC DB 1048 - PG. 4

W7

W8

LATERAL 'V' DITCH SEE DETAIL H DDE = 144.1 CY

TIE PROP. DITCH TO EXIST. DITCH

Q10 = 4.0cfs
V10 = 1.2fps

CL B RIP RAP EST. 1 TON EST. 5 SY GF

15" CAAP W/ELBOWS

30" RCP-IV

15" RCP-IV

TB 2GI

WOODS

FS SEE DETAIL B

2GI

MEDIAN 'V' DITCH SEE DETAIL NN

-L- N 63° 29' 33.7" W

N 61° 11' 33.7" W

BL-35

BL-36

65' CMP RD

TOE PROTECTION CLASS B RIP RAP EST = 155 TONS GT EST = 345 SY SEE DETAIL J

-L- POT Sta. 225+06.00 = -Y3RPC- POT Sta. 0+00.00 (47' RT)
Δ = 2° 18' 00"

DEPARTMENT OF AGRICULTURE

DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

$$$$SYSTIME$$$$
$$$$SYSDGN$$$$
$$$$USERNAME$$$$

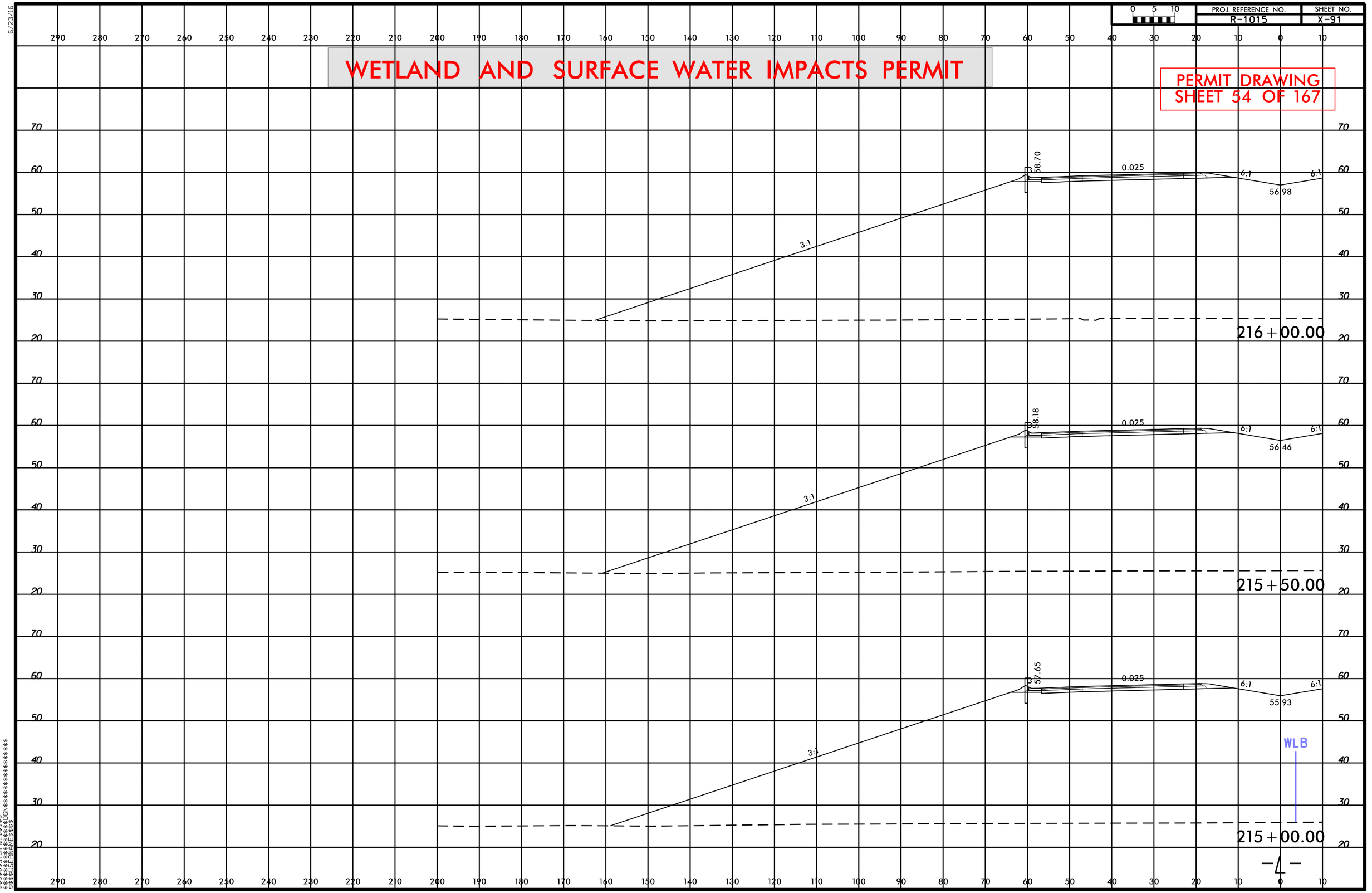
11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh16.dgn

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-91

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 54 OF 167



8/2/2018
mgberry
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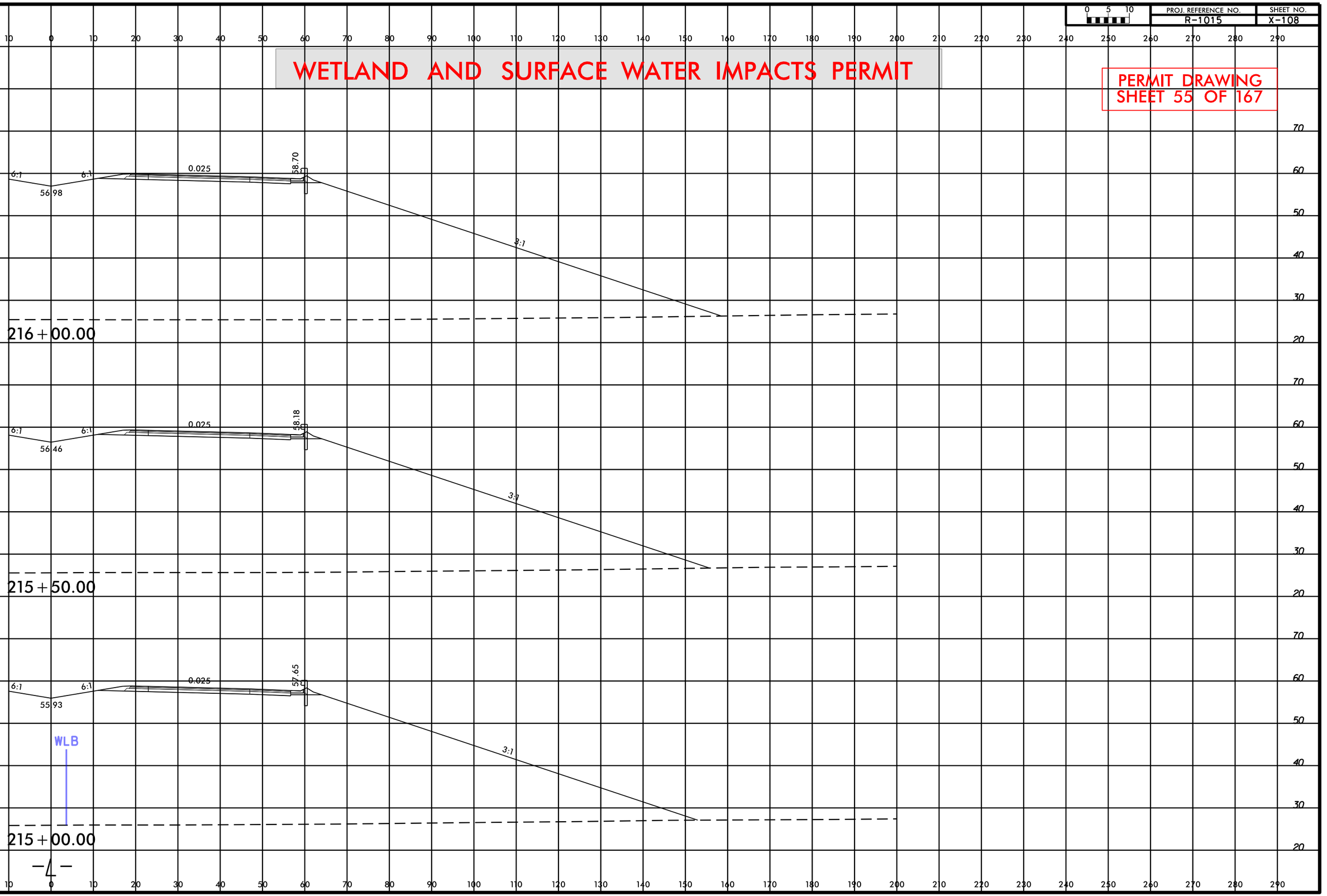
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-108

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 55 OF 167



8/2/2018
mgberry
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$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
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290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10

70 60 50 40 30 20

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 56 OF 167

61.69
0.025
6:1
6:1
59.91
3:1
3:1
3:1
24.53

220+50.00

61.50
0.025
6:1
6:1
59.75
3:1
24.38

220+00.00

61.27
0.025
6:1
6:1
59.55
WLB
3:1
24.23

219+50.00

8/2/2018
mgberry
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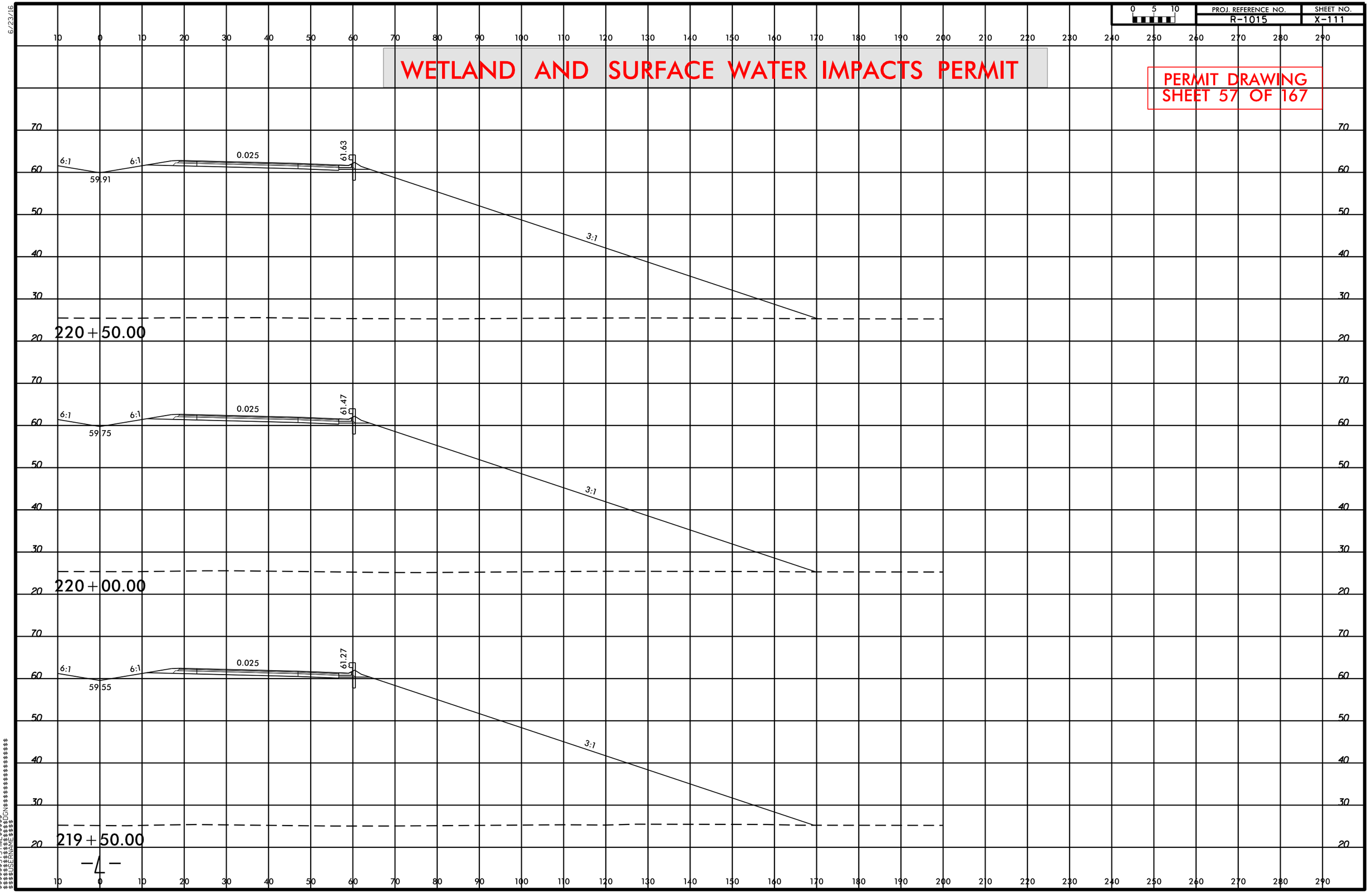
$$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-111

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 57 OF 167



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$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

REVISIONS

7/15/2018 -
PARCEL 4 - REVISED TCE STATION -Y3- 58+00 TO 61+00 LT
PARCEL 4 - ADDED TCE STATION -Y3RPC- 13+92 TO 15+27 LT
PARCEL 4 - CHANGED TCE TO PDE AND REVISED AREA STATION -Y3RPD- 16+62 TO 17+62 LT
PARCEL 4 - ADDED TCE STATION -Y3RPD- 17+62 TO 20+23 LT
PARCEL 4 - ADDED TCE STATION -Y3RPA- 13+45 TO 15+48 RT
PARCEL 4 - ADDED PDE STATION -Y3RPA- 13+93 TO 15+48 RT
PARCEL 4 - ADDED TCE STATION -Y3RPA- 61+80 RT TO -Y3- 65+00 LT
PARCEL 4 - ADDED TCE STATION -Y3RPB- 18+62 LT TO -Y3- 45+08 RT
8/14/2018
PARCEL 4 - REVISED PUE AND TCE STATION -Y3- 45+05 RT
10/29/2018 -
PARCEL 4 - REVISED PUE AT STATION -Y3- 45+00 TO 45+33 RT

F F — DENOTES EXCAVATION IN WETLAND

F F — DENOTES FILL IN WETLAND

— DENOTES MECHANIZED CLEARING

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

HC HC — ④ DENOTES HAND CLEARING

T T — DENOTES TEMPORARY FILL IN WETLAND

SITE 15

SITE 14

SITE 13

SITE 16

SITE 17

SITE 18

SITE 19

SITE 20

SITE 21

SEE ENLARGEMENTS

Q10 = 31CFS
V10 = 2.0CFS

Q10 = 8.85cfs
V10 = 1.64fps

ONLY IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN ON THIS SHEET. FOR ADDITIONAL IMPACTS DUE TO DETOUR SEE PSH 2B-2 (PERMIT DRAWING SHEET 4 OF 167).

MATCH LINE -Y3- STA. 45+00 SEE SHEET 43

MATCH LINE STA. 254+00 SEE SHEET 18

MATCH LINE STA. 226+00 SEE SHEET 16

MATCH LINE -Y3- STA. 61+00 SEE SHEET 44

MATCH LINE STA. 8+50 SEE SHEET 19

MATCH LINE STA. 11+00 SEE SHEET 18

PROJECT REFERENCE NO. R-005
SHEET NO. 17
RW SHEET NO.

ROADWAY DESIGN ENGINEER SEAL 015869

HYDRAULICS ENGINEER SEAL 032581

PERMIT DRAWING SHEET 58 OF 167

LOCATION: US 70 (HAVELOCK BYPASS) FROM SOUTH OF CRAVEN/JONES COUNTY LINE (SW BOUND LANE STA. 0+00) TO SR 1116 (CAHOON ROAD/BRICE BLVD)

TIP NO. R-5015 COUNTY: CRAVEN

DESIGNED BY: DGM

CHECKED BY: TRR DATE: 6/18/2018

GRAPHIC SCALE
40 25 0 50 100
PLANS

11/5/2018
mgilvary
K:\Projects-dir\PERMITS_Environmental Drawings\Workset & Sheets\R-5015_Hyd_pmt_wet_sht017.dgn

REVISIONS

7/13/2018 -
PARCEL 4 - REVISED TCE STATION -Y3- 59+00 TO 61+00 LT
PARCEL 4 - ADDED TCE STATION -Y3RPC- 13+92 TO 15+42 LT
PARCEL 4 - CHANGED TCE TO PCE AND REVISED AREA STATION -Y3RPD- 16+62 TO 17+62 LT
PARCEL 4 - ADDED TCE STATION -Y3RPD- 17+62 TO 20+23 LT
PARCEL 4 - ADDED TCE STATION -Y3RPC- 13+45 TO 13+48 RT
PARCEL 4 - ADDED PCE STATION -Y3RPA- 37+93 TO 15+98 RT
PARCEL 4 - ADDED TCE STATION -Y3RPA- 43+80 RT TO -Y3- 45+00 LT
PARCEL 4 - ADDED TCE STATION -Y3RPB- 18+62 LT TO -Y3- 45+08 RT
8/14/2018
PARCEL 4 - REVISED PUE AND TCE STATION -Y3- 45+05 RT
10/29/2018 -
PARCEL 4 - REVISED PUE AT STATION -Y3- 45+00 TO 45+33 RT

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

HC HC ④ DENOTES HAND CLEARING

T T DENOTES TEMPORARY FILL IN WETLAND

SITE 15

SITE 14

SITE 13

SITE 16

SITE 17

SITE 18

SITE 19

SITE 20

SITE 21

SEE ENLARGEMENTS

MATCH LINE -Y3- STA. 45+00 SEE SHEET 43

MATCH LINE STA.254+00 SEE SHEET 18

MATCH LINE STA.220+00 SEE SHEET 16

MATCH LINE -Y3- STA. 61+00 SEE SHEET 44

Q10 = 31CFS
V10 = 2.0CFS

Q10 = 8.85cfs
V10 = 1.64fps

EXCAVATION

ONLY IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN ON THIS SHEET. FOR ADDITIONAL IMPACTS DUE TO DETOUR SEE PSH 2B-2 (PERMIT DRAWING SHEET 4 OF 167).

W9 W10 W11 S6 S7

PROJECT REFERENCE NO. R-205
SHEET NO. 17
TIP NO. R-2405
ROADWAY DESIGN ENGINEER SEAL 015869
HYDRAULICS ENGINEER SEAL 032581

PERMIT DRAWING SHEET 59 OF 167

LOCATION: US 70 (HAVELOCK BYPASS) FROM SOUTH OF EASTERN (CRAVEN COUNTY LINE) TO SOUTH OF SR 1178 (CARAWAY ROAD) BLVD.

TIP NO. R-2405 COUNTY: CRAVEN
DESIGNED BY: DGM
CHECKED BY: TBR DATE: 8/19/2018

GRAPHIC SCALE
50 25 0 50 100
PLANS

8/17/99

REVISIONS

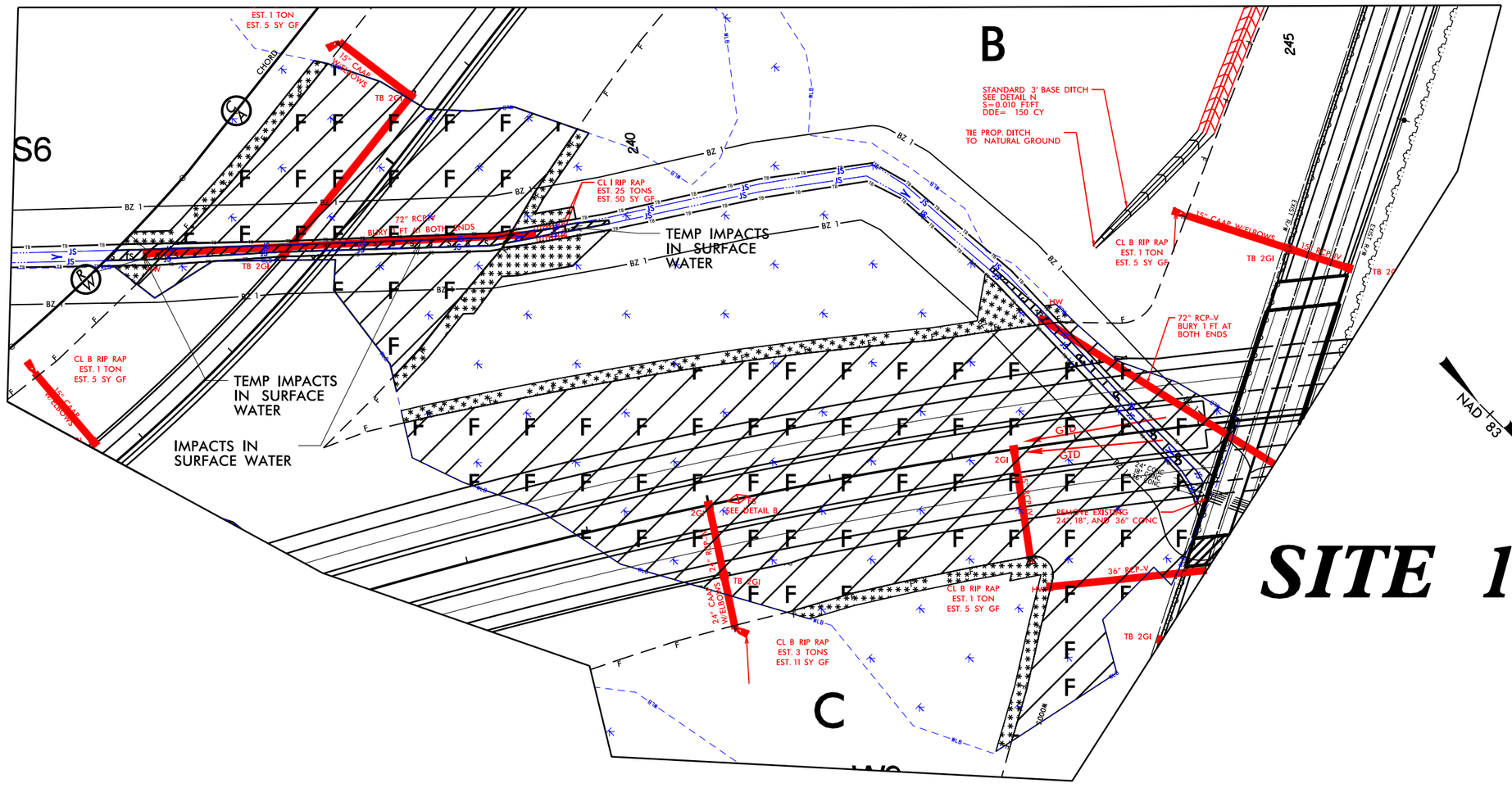
PROJECT REFERENCE NO.	SHEET NO.
R-1015	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PERMIT DRAWING
SHEET 60 OF 167

ENLARGEMENT

SITE 14



SITE 16

T T DENOTES TEMPORARY FILL IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

HC HC DENOTES HAND CLEARING

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

100' 0' 100'
GRAPHIC SCALE

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh17_enlarge site 14,16.dgn

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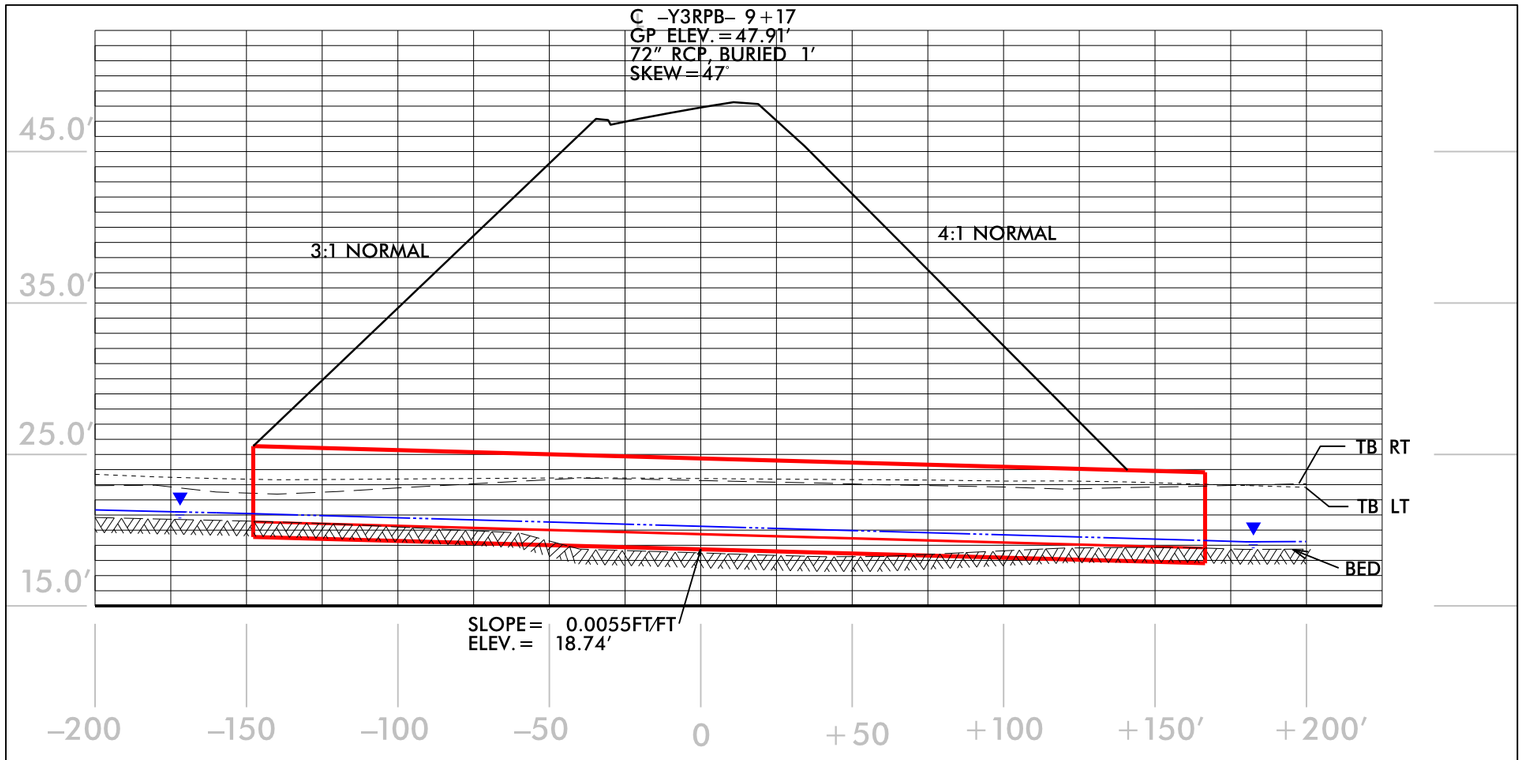
$$$$$DGN$$$$$



PROFILE

SITE 14

NCDOT
DIVISION OF HIGHWAYS
CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)
US 70 (HAVELOCK BYP)
FROM SOUTH OF CARTERET / CRAVEN COUNTY LINE
TO SOUTH OF SR 1176

SHEET 61 OF 167 08 / 01 / 2018

8/1/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\R1015_Hyd_prm_wet_site14_profile.dgn

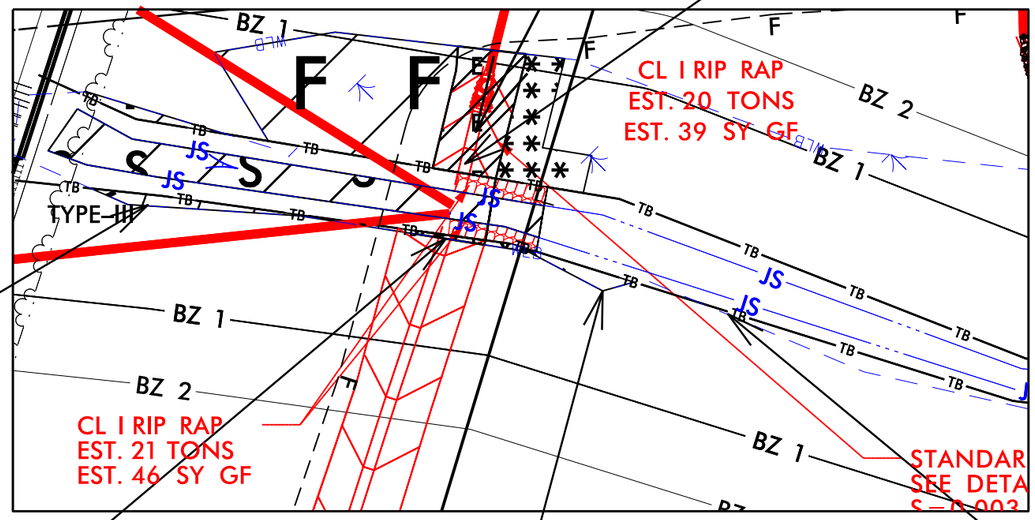
PROJECT REFERENCE NO.	SHEET NO.
R-1015	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PERMIT DRAWING
SHEET 62 OF 167

ENLARGEMENT

SITE 17



Q10 = 44CFS
V10 = 2.2FPS

FILL IN WETLANDS

Q10 = 69CFS
V10 = 1.6FPS

MECHANIZED CLEARING

HAND CLEARING

HC HC DENOTES HAND CLEARING

F F DENOTES FILL IN WETLAND

T T DENOTES TEMPORARY FILL IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

40′ 0′ 40′
GRAPHIC SCALE

REVISIONS 8/17/99

11/15/2018
mgberry
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$$$$$$$$DGNS$$$$$$$$$$$$$$$$$$
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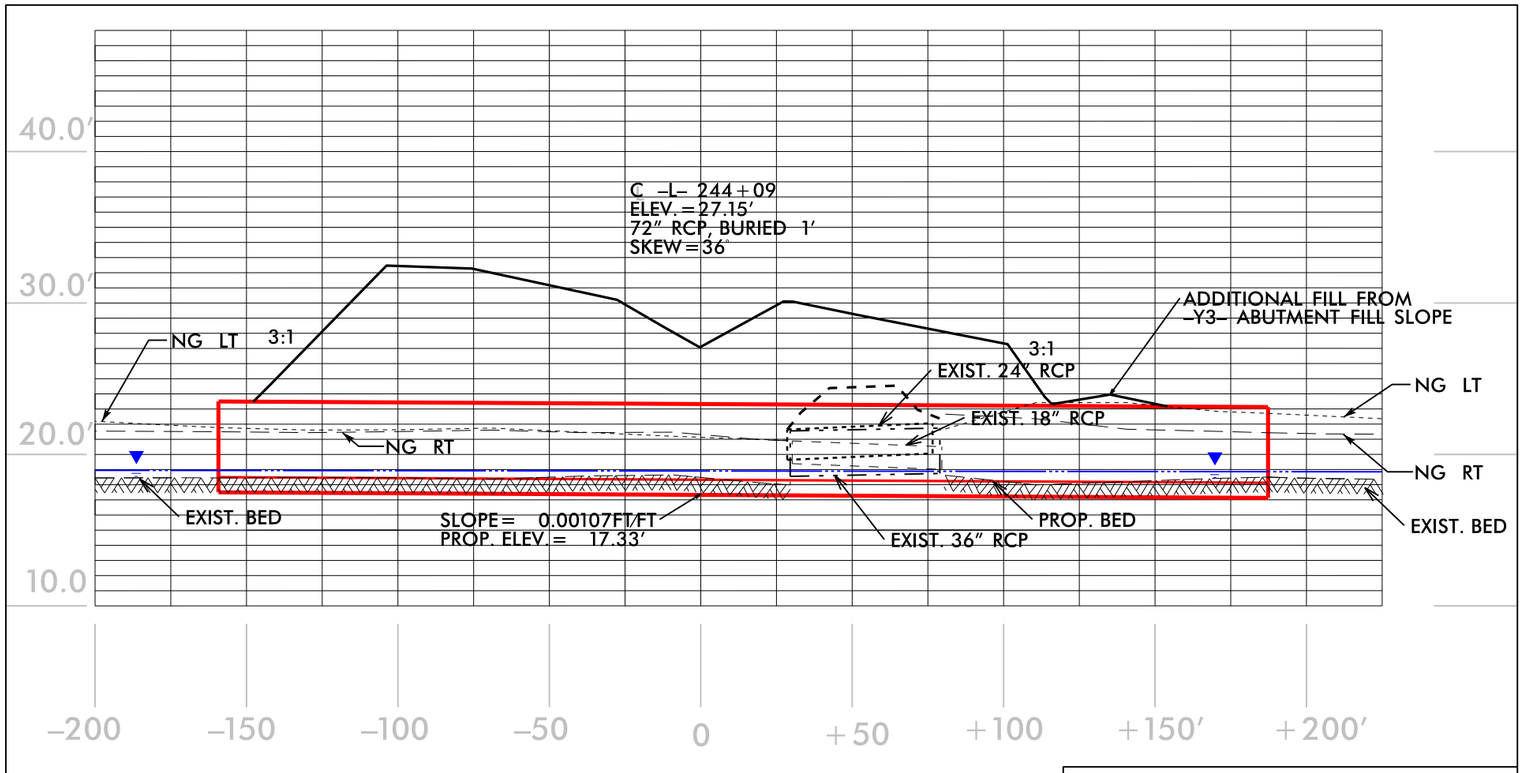

PROFILE

SITE 16 & 17

NCDOT
DIVISION OF HIGHWAYS
CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)
US 70 (HAVELOCK BYP)
FROM SOUTH OF CARTERET
/ CRAVEN COUNTY LINE
TO SOUTH OF SR 1176

SHEET 63 OF 167 08/01/2018

8/1/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\R1015_Hyd_prm_wet_site16_17_profile.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-1015	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 64 OF 167

NAD 83

REVISIONS 8/17/99

SITE 18

SITE 19

SITE 20

SITE 21

EXCAVATION

LATERAL 3' BASE DITCH SEE DETAIL P DDE = 758 CY

TEMP IMPACTS TO SURFACE WATER

MECHANIZED CLEARING

IMPACTS TO SURFACE WATER

TEMP IMPACTS IN SURFACE WATER

REMOVE EXIST. 18" CMP

TB 2GI

15" CAAP W/BOWS

42" RCP-IV

CL B RIP RAP EST. 2 TON EST. 7 SY GF

CL I RIP RAP EST. 20 TONS EST. 67 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL I RIP RAP EST. 15 TONS EST. 30 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

LATERAL 2' BASE DITCH SEE DETAIL M

LATERAL 3' BASE DITCH SEE DETAIL U

MATCH LINE - Y5 STA. 61+00 SEE SHEET

WEYERHAEUSER COMPANY

W10

S7

BZ 1

BZ 2

PDE

DDE

CHORD

DUE

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES TEMPORARY FILL IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES HAND CLEARING

50' 0' 50' 100' 150'
GRAPHIC SCALE

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh17_enlarge site18,19.dgn

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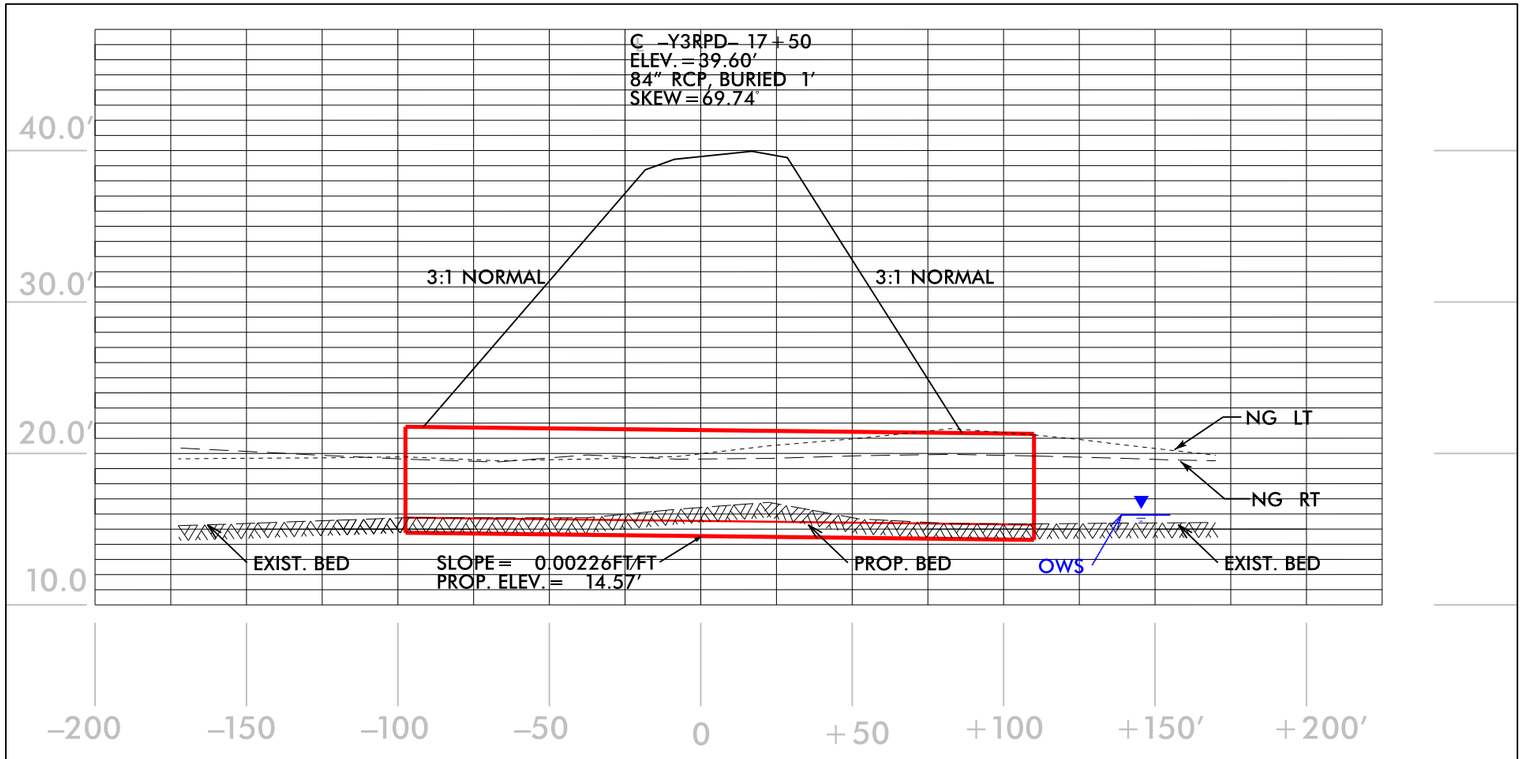

PROFILE

SITE 19

NCDOT
DIVISION OF HIGHWAYS
CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)
US 70 (HAVELOCK BYP)
FROM SOUTH OF CARTERET / CRAVEN COUNTY LINE
TO SOUTH OF SR 1176

SHEET 65 OF 167 08 / 01 / 2018

8/1/2018
mgberry
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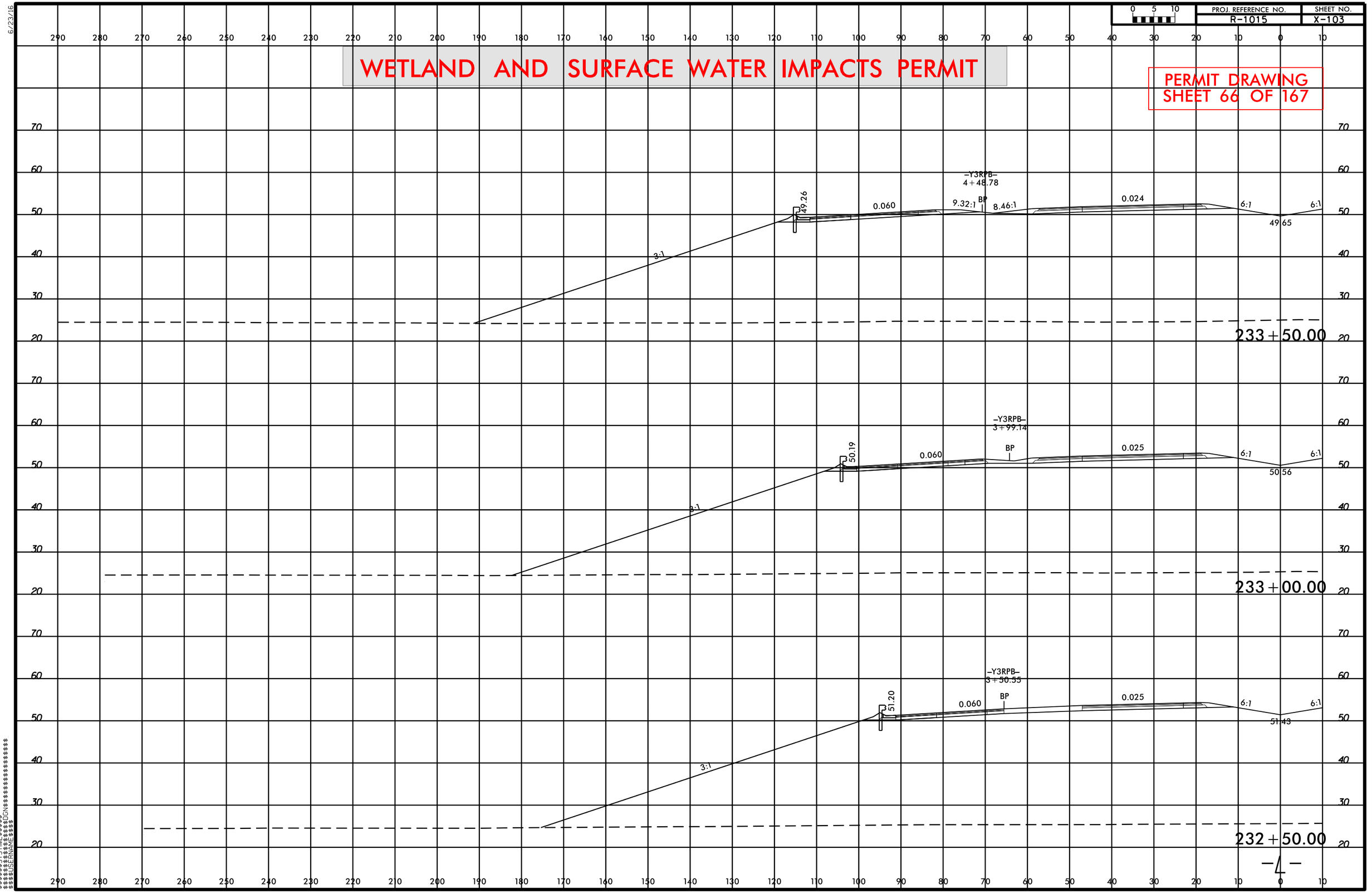
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-103

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 66 OF 167



8/2/2018
mgberry
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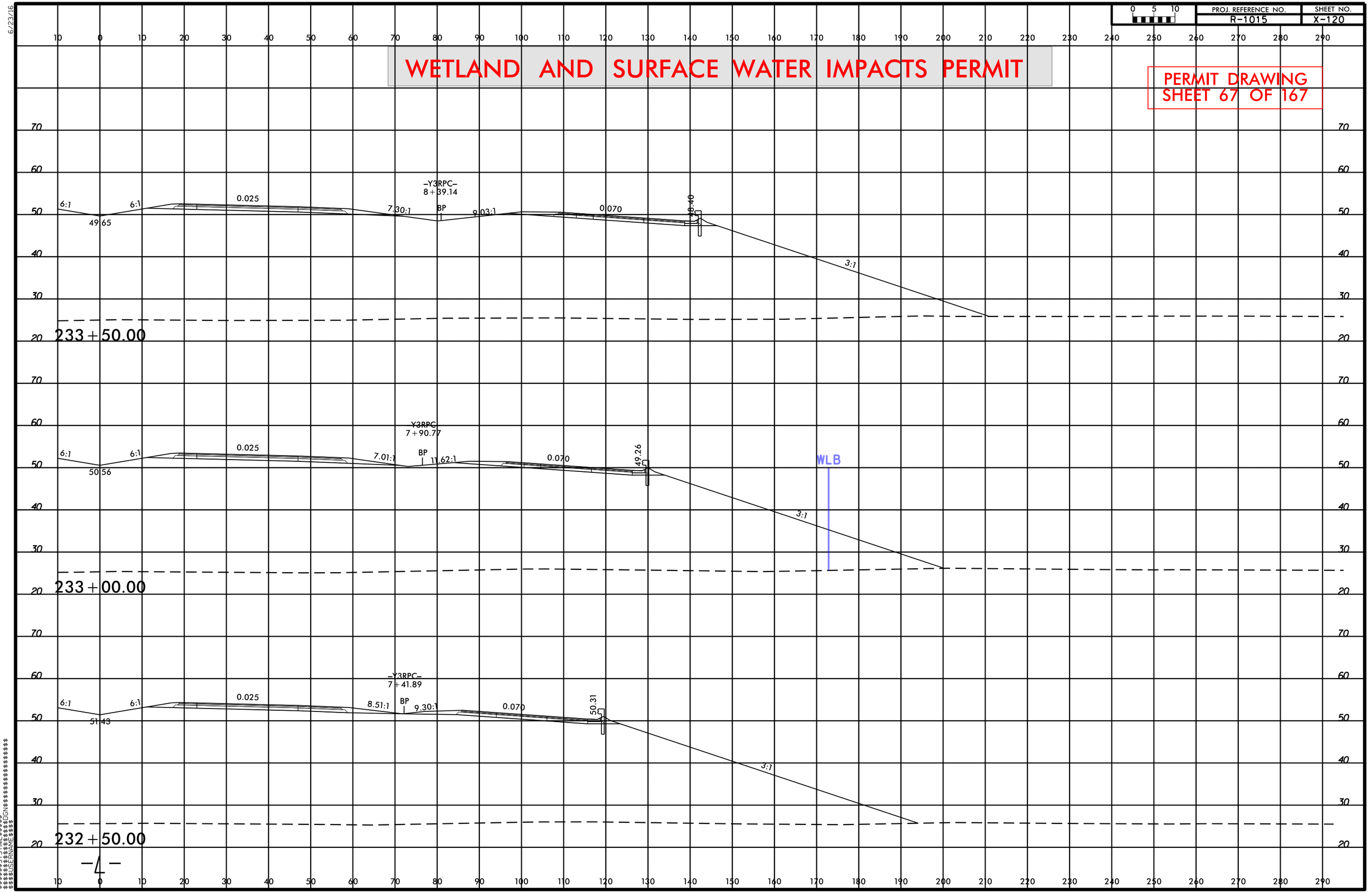
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-120

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 67 OF 167



–4–

8/2/2018
mgbarry
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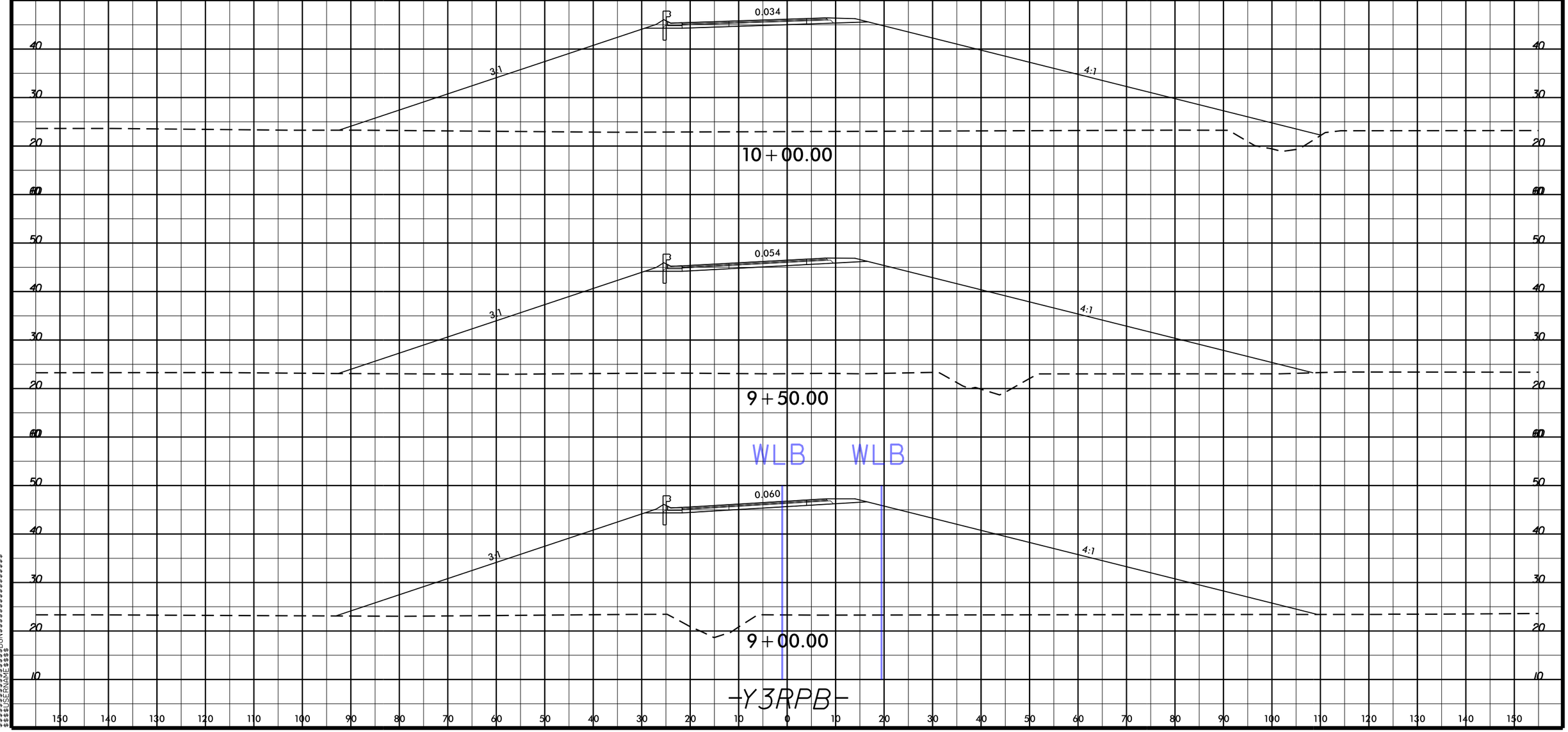
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-357

PERMIT DRAWING
SHEET 68 OF 167

WETLAND AND SURFACE WATER IMPACTS PERMIT



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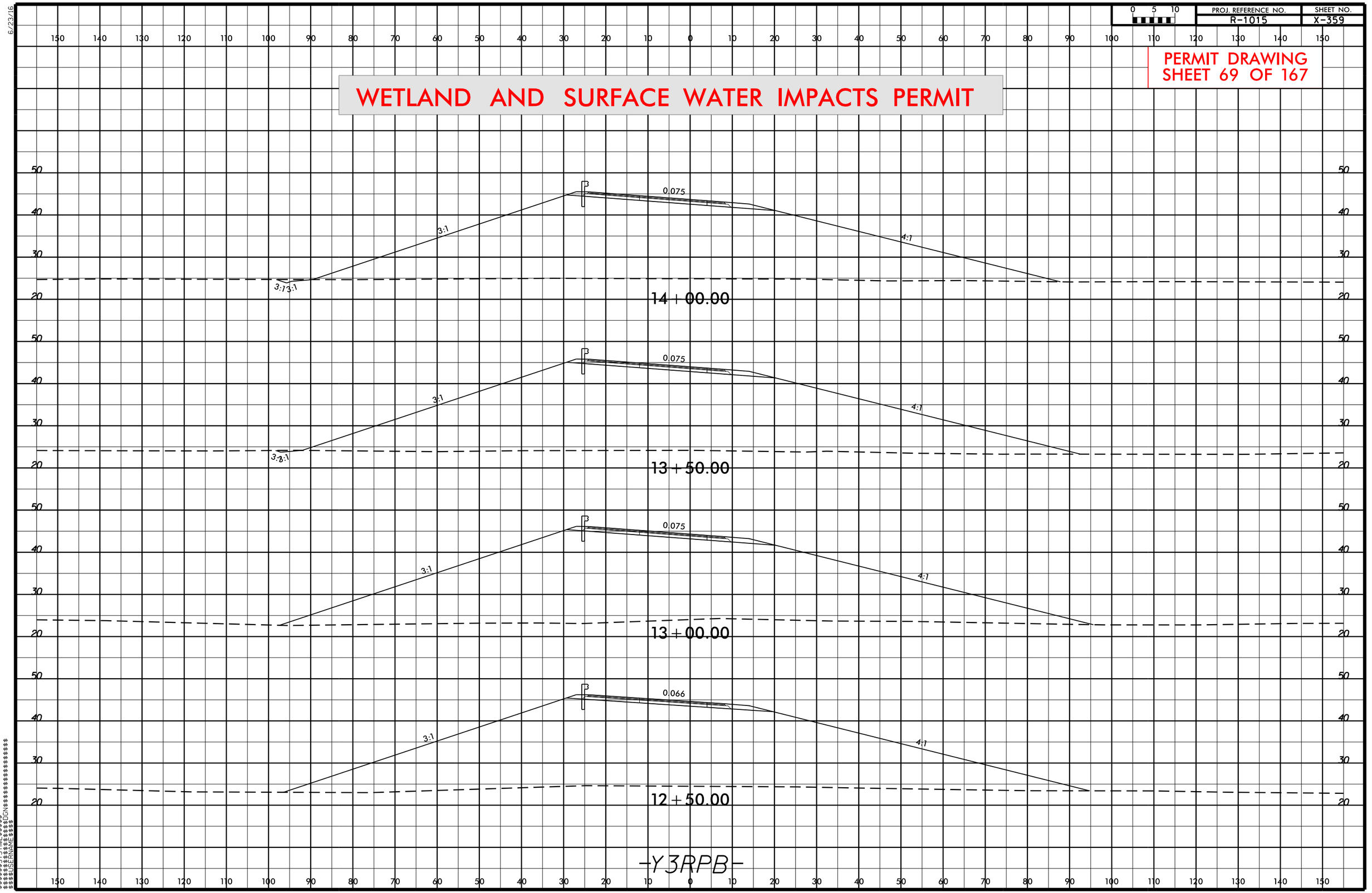
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-359

PERMIT DRAWING
SHEET 69 OF 167

WETLAND AND SURFACE WATER IMPACTS PERMIT



8/2/2018
mmoore
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$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
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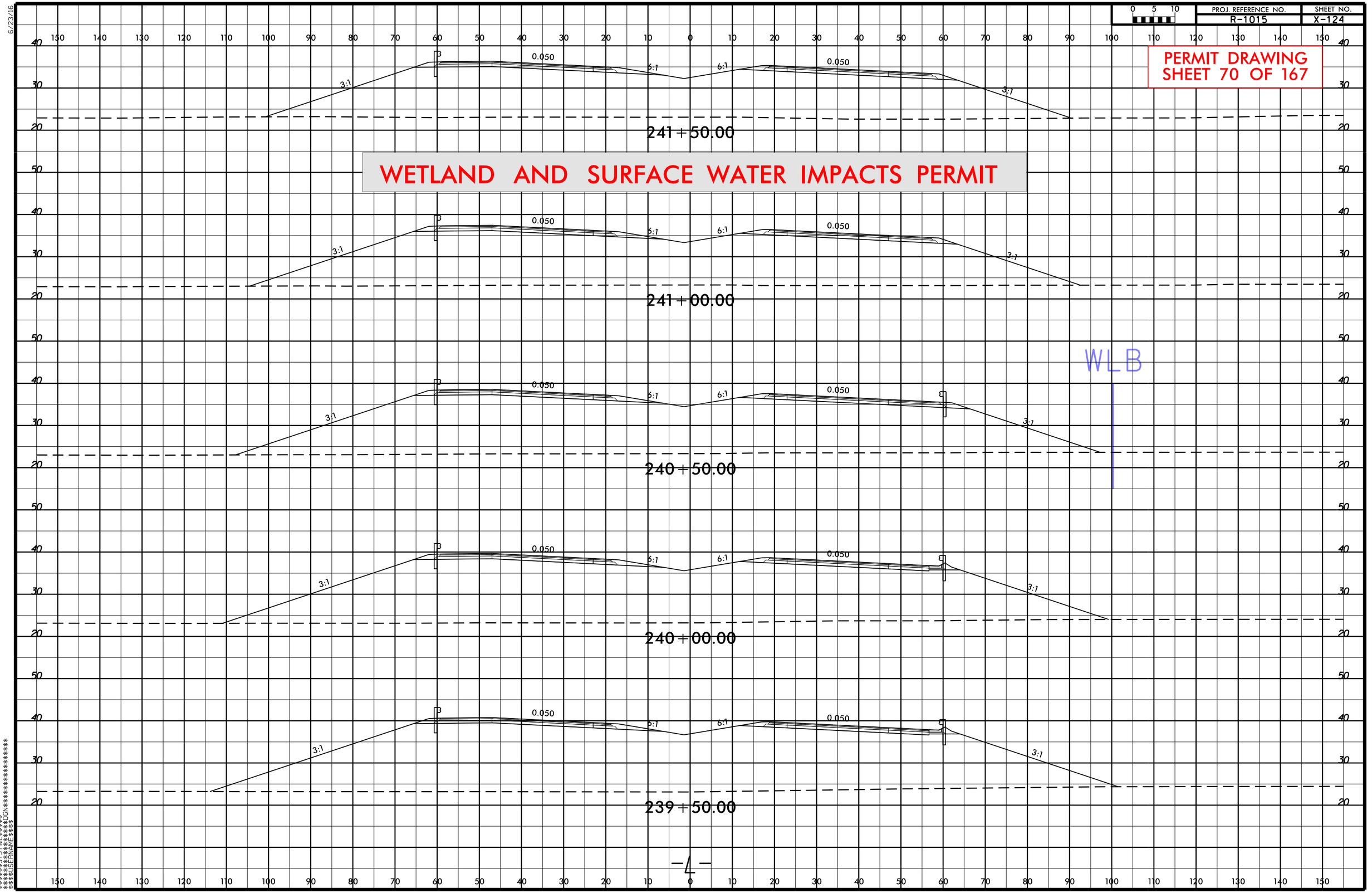
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-124

PERMIT DRAWING
SHEET 70 OF 167



WETLAND AND SURFACE WATER IMPACTS PERMIT

WLB

8/2/2018
mgberry
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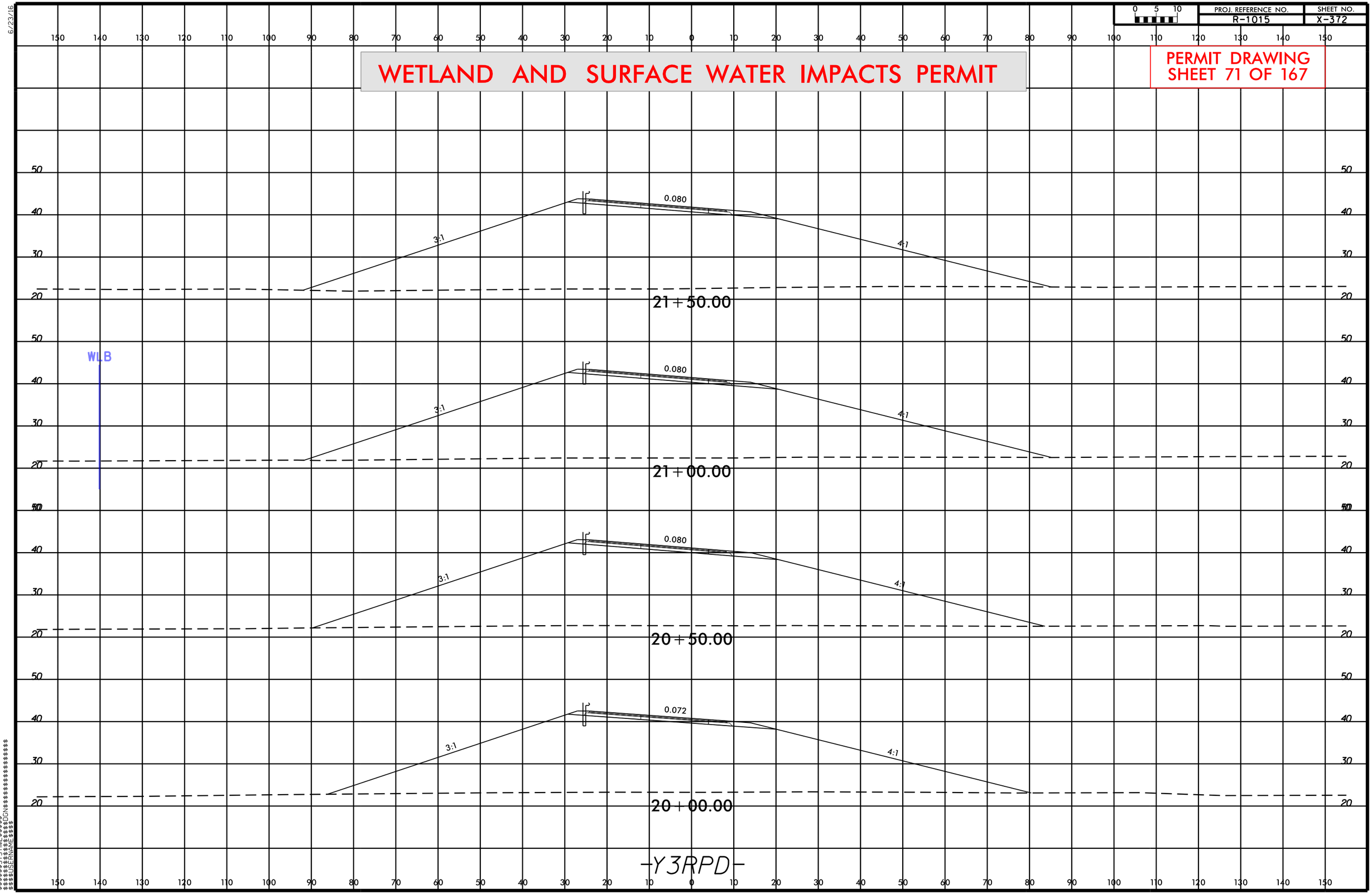
$$$$$$$USERNAME$$$$$
$$$$$$$SYSTIME$$$$$$
$$$$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-372

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 71 OF 167



8/2/2018
mgberry
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$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$
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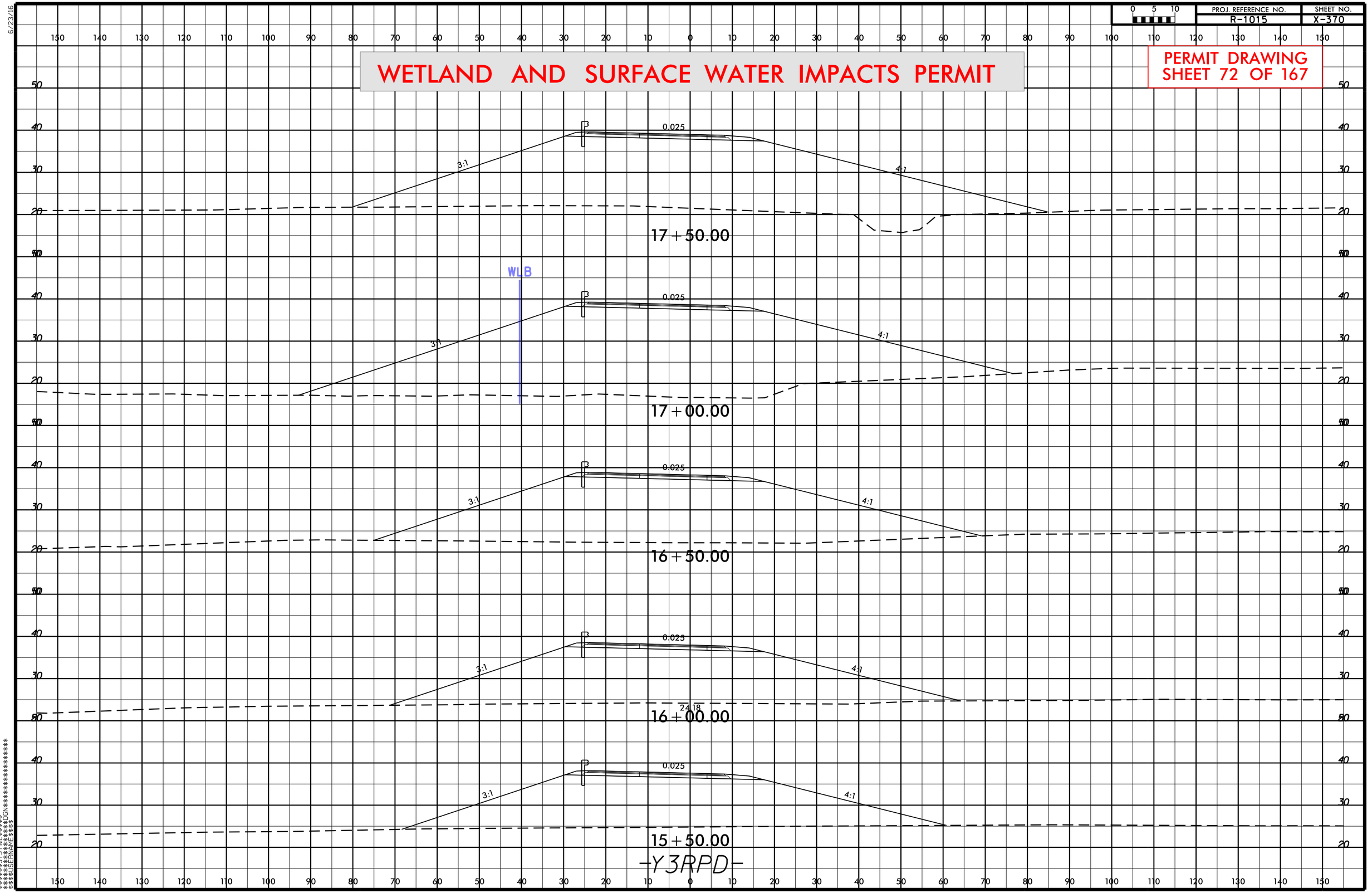
0 5 10
PROJ. REFERENCE NO. R-1015
SHEET NO. X-370

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 72 OF 167



8/2/2018
mgberry
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$$$$$USERNAME$$$$

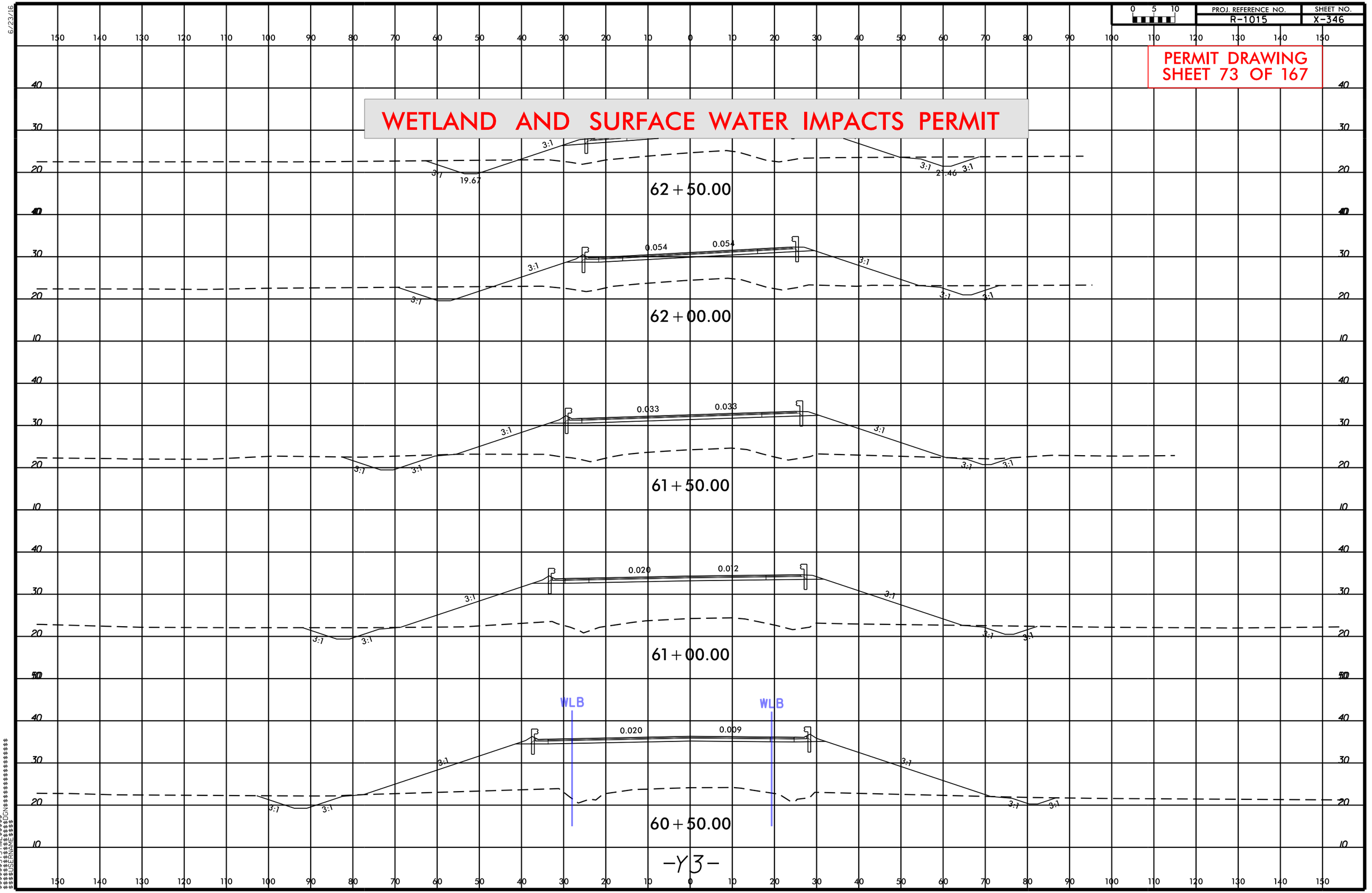
-Y3RPD-

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-346

PERMIT DRAWING
SHEET 73 OF 167

WETLAND AND SURFACE WATER IMPACTS PERMIT



-Y3-

8/2/2018
mmorgan
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$$$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

PERMIT DRAWING
SHEET 74 OF 167

PROJECT REFERENCE NO.	SHEET NO.
R-1015	18
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

SITE 22

REVISIONS

7/13/2018 - PARCEL 2 AND PARCEL 5 - REVISED TCE STATION L 267+00 RT
8/14/2018 - PARCEL 2 - REVISED R/W AND TCE FROM STATION -Y3RPD- 1+98 TO STATION -L- 272+98.93 RT
PARCEL 5 - REVISED R/W STATION -Y3RPD- 1+98 RT

8/17/99

WEYERHAEUSER COMPANY (4)

NAD 83

DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST (2)

MATCH LINE -Y3RPA- STA. 8+50 SEE SHEET 17

MATCH LINE STA. 254+00 SEE SHEET 17

MATCH LINE -Y3RPD- STA. 14+00 SEE SHEET 17

MATCH LINE STA. 268+00 SEE SHEET 19

-Y3RPA-

S 27° 02' 25.2" E

CHORD

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

15" RCP-IV

FS
SEE DETAIL B
2GI-D

2GI

GTD

18" RCP-V

STANDARD 2' BASE DITCH
SEE DETAIL V
S=0.000 FT/FT
DDE= 3 CY

TIE PROP. DITCH
TO NATURAL GROUND

CL B RIP RAP
EST. 3 TONS
EST. 10 SY GF

RETAIN
EXIST. 24" CMP

S9

W12

W13

DUE

WOODS

POWERLINE EASEMENT

MECH. CLEARING

LATERAL 'V' DITCH
SEE DETAIL L
DDE = 89 CY

18" CMP W/ ELBOWS

18 2GI

15" RCP-IV

FRANK A. MARMAROSE, et ux

GRAPHIC SCALE
50' 0' 50' 100' 150'

DENOTES MECHANIZED CLEARING

(5) SEE SHEETS 56 AND 57 FOR PROFILE -L-
SEE SHEETS 58 FOR PROFILE -L-
SEE SHEETS 79 FOR PROFILE -Y3RPA-
SEE SHEETS 82 FOR PROFILE -Y3RPD-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$

PERMIT DRAWING
SHEET 75 OF 167

PROJECT REFERENCE NO.	SHEET NO.
R-1015	18
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No. F-0105

REVISIONS

7/13/2018 - PARCEL 2 AND PARCEL 5 - REVISED TCE STATION L 267+00 RT
8/14/2018 - PARCEL 2 - REVISED R/W AND TCE FROM STATION -Y3RPD- 1+98 TO STATION -L- 272+98.93 RT
PARCEL 5 - REVISED R/W STATION -Y3RPD- 1+98 RT

8/17/99

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	19
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 76 OF 167

REVISIONS

7/13/2018 - PARCEL 2 - ADDED TCE STATION -L- 270+09 TO 273+95 RT & STATION -Y3RPD- 0+99 TO 2+35 RT
8/14/2018 - PARCEL 2 - REVISED P/W TCE AND PDE FROM STATION -Y3RPD- 0+00 TO 2+35 RT & STATION -L- 270+09 TO 273+95 RT
PARCEL 2 - REVISED PDE STATION -L- 268+40 TO 268+75 RT
PARCEL 2 - ADDED PDE STATION -L- 268+15 TO 268+40 LT
PARCEL 2 - REVISED MONUMENT TO MATCH STATION AND OFFSET -L- 272+98.83 RT
PARCEL 2 - ADDED TCE STATION -L- 268+46 TO 270+16 LT
PARCEL 2 - REVISED PDE -L- STATION 268+73 LT

8/17/99

3X

SITE 22

SITE 23

TEMP/STREAM IMPACTS

MECH. CLEARING

NAD 83

MATCH LINE STA. 268+00 SEE SHEET 18

MATCH LINE STA. 282+00 SEE SHEET 20

BEGIN WW FENCE

END WW FENCE

SPECIAL LATERAL 'V' DITCH SEE DETAIL W DDE = 631 CY

W13

CHORD

JB w/SLAB LID SEE SPECIAL DETAIL SHEET 2C-1)

15" CAAP W/ELBOWS

18" CAAP W/ELBOWS

18" RCP-IV

10" RCP-IV

18" RCP-IV

15" RCP-IV

TB 2GI

WOODS

FS SEE DETAIL B

2GI

GREU (TL-3)

N 8° 29' 42.1" W

8:1

CL RIP RAP EST. 77 TONS EST. 150 SY GF

TOE PROTECTION CLASS B RIP RAP EST = 90 TONS GT: EST = 200 SY SEE DETAIL J

LATERAL 'V' DITCH SEE DETAIL L DDE = 89 CY

S9

2X

RIPRAP SHALL BE INSTALLED FLUSH WITH CHANNEL BANKS AND BED

50' 0' 50' 100' 150'
GRAPHIC SCALE

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

(2)

DENOTES MECHANIZED CLEARING

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

SEE SHEET 1 FOR TOP PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/15/2018
mgberry
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$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$FILENAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	19
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 77 OF 167

REVISIONS

7/13/2018 - PARCEL 2 - ADDED TCE STATION -L- 270+00 TO 273+85 RT 8/14/2018 -
PARCEL 2 - REVISED P/W, TCE AND PDE FROM STATION -L- 270+00 TO 273+50
PARCEL 2 - ADDED PDE STATION -L- 268+15 TO 269+40 RT
PARCEL 2 - ADDED PDE STATION -L- 268+46 TO 278+61 LT
PARCEL 2 - ADDED TCE STATION -L- 268+46 TO 278+61 LT
PARCEL 2 - REVISED MONUMENT TO MATCH STATION AND OFFSET -L- 272+98.83 RT
PARCEL 2 - REVISED P/W TO ADDED R/W MONUMENT
PARCEL 2 - REVISED PDE STATION -L- STATION 268+40.75 RT
PARCEL 2 - REVISED PDE STATION -L- STATION 268+73 LT

8/17/99

SITE 22

3X

TEMP/STREAM IMPACTS

MECH. CLEARING

PDE

84" RCP V BURIED

MECH. CLEARING

SPECIAL LATERAL 'V' DITCH SEE DETAIL W DDE = 631 CY

BEGIN WW FENCE

END WW FENCE

W13

CHORD

18" STAR LID SEE SPECIAL DETAIL (SHEET 2C-1)

15" CAAP W/ELBOWS

TB 2GI

WOODS

FS SEE DETAIL B

2GI

18" RCP IV

15" RCP IV

GREU (TL-3)

18" CAAP W/ELBOWS

MATCH LINE STA. 268+00 SEE SHEET 18

CLEAR AND GRUB EST. 77 TONS EST. 150 SY GF

S9

TOE PROTECTION CLASS B RIP RAP (EST. = 90 TONS GT-EST. = 200 SY SEE DETAIL J

LATERAL 'V' DITCH SEE DETAIL L DDE = 89 CY

RIPRAP SHALL BE INSTALLED FLUSH WITH CHANNEL BANKS AND BED

SITE 23

N 8° 29' 42.1" W

8:1

15" RCP IV

15" CAAP W/ELBOWS

MATCH LINE STA. 282+00 SEE SHEET 20

2X

S9

50' 0' 50' 100' 150'
GRAPHIC SCALE

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

(2)

DENOTES MECHANIZED CLEARING

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

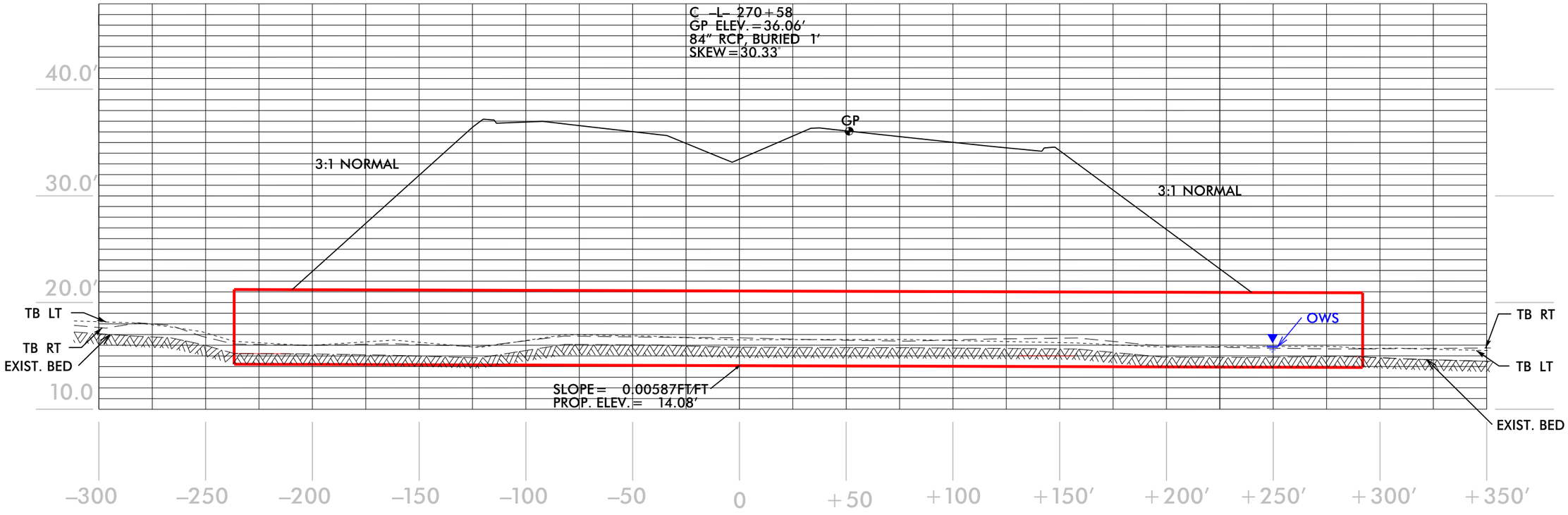
DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN

SEE SHEET WETLAND PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$SYSDATE$$$$
$$$$FILENAME$$$$

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh19.dgn



PROFILE

SITE 22

NCDOT
DIVISION OF HIGHWAYS
CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)
US 70 (HAVELOCK BYP)
FROM SOUTH OF CARTERET / CRAVEN COUNTY LINE TO SOUTH OF SR 1176

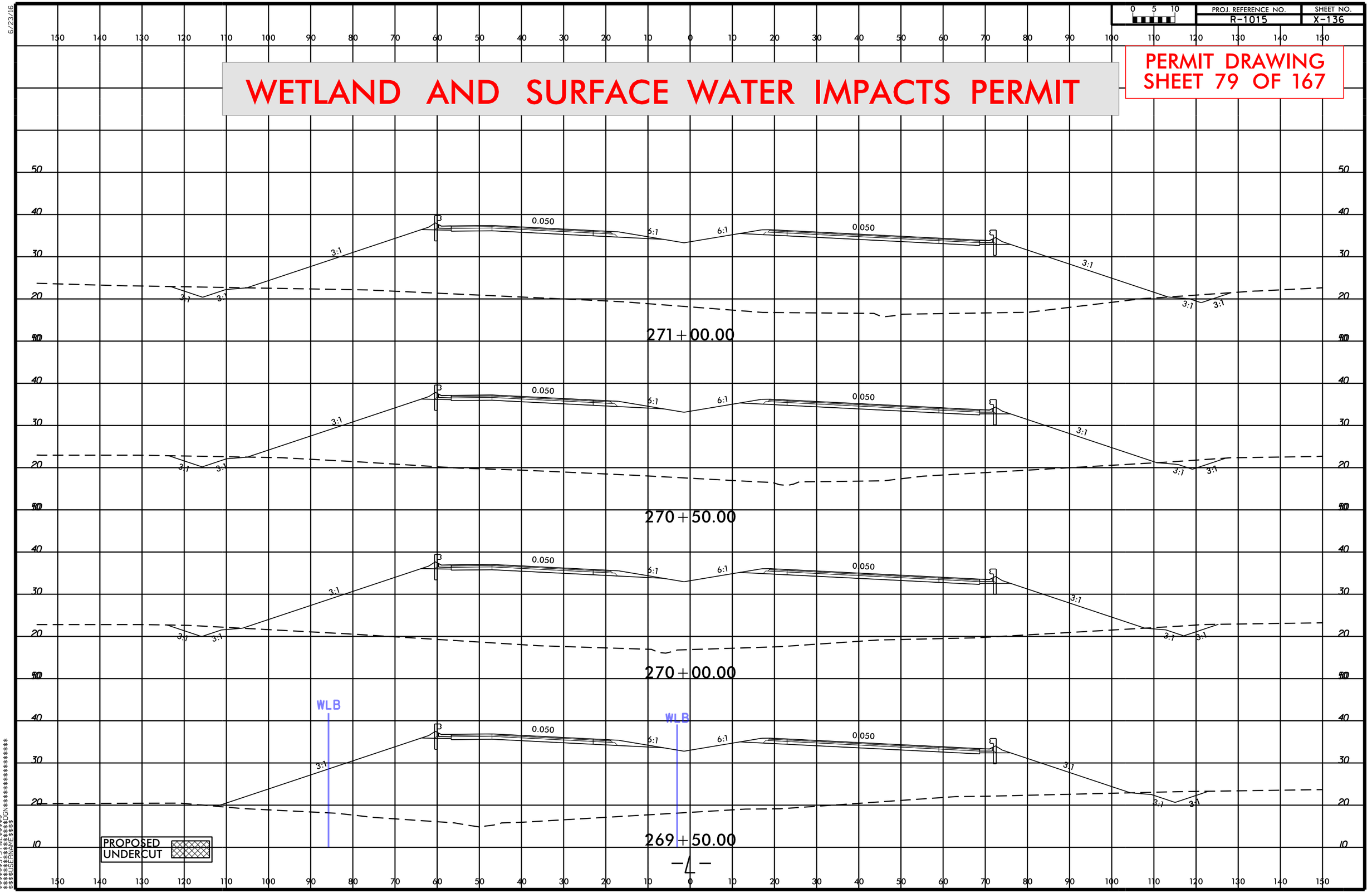
SHEET 78 OF 167 08/01/2018

8/1/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\R1015_Hyd_prm_wet_site22_profile.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-136

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 79 OF 167



8/2/2018
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$$$$USERNAME$$$$DGN$$$$$$$$$$

8/17/99

REVISIONS

7/13/2018 - PARCEL 2 - REMOVED TOE STATION -L- 292+10 TO 292+65 RT

PROJECT REFERENCE NO.	SHEET NO.
R-1015	20
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 80 OF 167

SITE 23

S10

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

285

290

295

MATCH LINE STA. 282+00 SEE SHEET 19

MATCH LINE STA. 296+00 SEE SHEET 21

CLASS II RIP RAP

WOODS

TB 1GI

2GI

FS
SEE DETAIL B

15" RCP-IV

025

15" CAAP W/ELBOWS

TB 2GI

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

-BL-48

-BL-49

-BL-50

TOE PROTECTION
CLASS B RIP RAP
EST = 35 TONS
GT EST = 70 SY
SEE DETAIL J

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

PDE

18" CAAP W/ELBOWS

18" RCP-IV

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF
15" RCP-III

15" RCP-III

2GI-D

18" RCP-IV

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

SITE 23
WORK BRIDGE

W13

W13

S9

SOUTHWEST PRONG OF SLOCUM CREEK

BZ 1

BZ 2

JS

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

TEMP. WORK BRIDGE

DENOTES MECHANIZED CLEARING

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEETS 59 FOR PROFILE -L-
SEE SHEET 2B-8 SKETCH 6 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/15/2018
mgberry
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$$$$$SYSTIME$$$$$
$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$

8/17/99

REVISIONS

7/13/2018 - PARCEL 2 - REMOVED TIE STATION -L- 292+10 TO 292+65 RT

PROJECT REFERENCE NO.	SHEET NO.
R-1015	20
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 81 OF 167

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

285 290 295

SITE 23

S10

MATCH LINE STA. 282+00 SEE SHEET 19

MATCH LINE STA. 296+00 SEE SHEET 21

CLASS II RIP RAP

TOE PROTECTION CLASS B RIP RAP EST. 35 TONS GT EST. 70 SY SEE DETAIL 1

CL B RIP RAP EST. 7 TONS EST. 7 SY GF

PDE

CL B RIP RAP EST. 1 TON EST. 5 SY GF 15" RCP-III

18" CAMP W ELBOWS

TB 2GI

18" RCP-IV

15" RCP-IV

15" CAMP W ELBOWS

TB 2GI

TB TGI

WOODS

-BL-48

-BL-49

-BL-50

025

2GI FS SEE DETAIL

2GI-D FS SEE DETAIL B

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

SITE 23
WORK BRIDGE

SOUTHWEST PRONG OF SLOCUM CREEK

BZ 1 BZ 2

W13

W13

S9

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

TEMP. WORK BRIDGE

DENOTES MECHANIZED CLEARING

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEETS 59 FOR PROFILE -L-
SEE SHEET 2B-8 SKETCH 6 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$
$$$$$

5/28/99

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO.	SHEET NO.
R-1015	59
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 82 OF 167

-L-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 10.1	FT
BASE DISCHARGE	= 2658	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 10.9'	FT
OVERTOPPING DISCHARGE	= +3330	CFS
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING ELEVATION	= 23.24'	FT
W.S. ELEVATION AT DATE OF SURVEY	= 6.6	FT

(-)0.3813%

2:1

NG WBL

NWS = 6.6

NG EBL

NG ℄

2:1

FOR -L- PLAN, SEE SHEET NO. 20

BM15 ELEVATION = 27.08
N 418342 E 2616967
BL STATION 210+11.251 LEFT
RR SPIKE IN TREE

PIPE HYDRAULIC DATA
24" RCP Sta. 306+48

DRAINAGE AREA	= 1.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 10	CFS
DESIGN HW ELEVATION	= 25.4	FT
100 YEAR DISCHARGE	= 11.1	CFS
100 YEAR HW ELEVATION	= 25.5	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 34	CFS
OVERTOPPING ELEVATION	= 28.3'	FT

PIPE HYDRAULIC DATA
42" RCP Sta. 309+53

DRAINAGE AREA	= 45.6	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 98	CFS
DESIGN HW ELEVATION	= 24.6	FT
100 YEAR DISCHARGE	= 135	CFS
100 YEAR HW ELEVATION	= 24.8	FT
OVERTOPPING FREQUENCY	= 100+/-	YRS
OVERTOPPING DISCHARGE	= 53	CFS
OVERTOPPING ELEVATION	= 24.7	FT

PI = 307+38.00
EL = 28.06'
K = 261
VC = 230'

42" RCP-IV
-L- STA. 309+53 ELEV. = 21.86'

(-)0.3813%

(+)0.5000%

24" RCP-IV
-L- STA. 306+48 ELEV. = 22.37'

(+) 0.9953%

BEGIN DITCH
+00.00 RT
11.70'

FOR -L- PLAN, SEE SHEET NO. 21

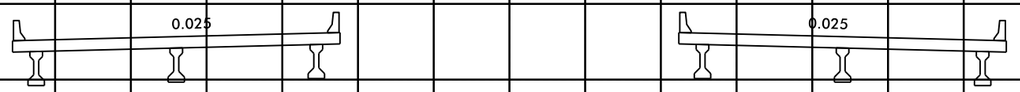
$$$$$$$SYSTIME$$$$$$
$$$$$$$

PERMIT DRAWING
SHEET 83 OF 167

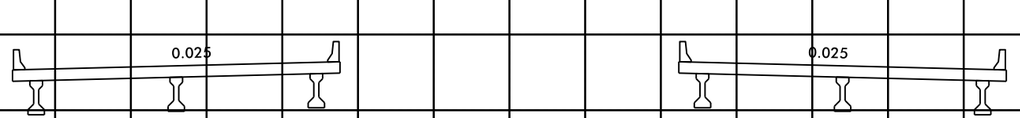
WETLAND AND SURFACE WATER IMPACTS PERMIT

287+00.00

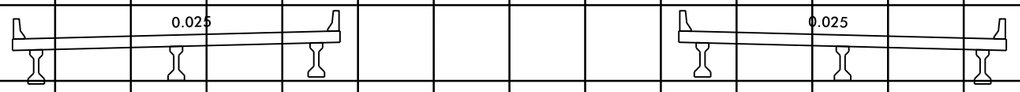
286+50.00



286+00.00



285+50.00



285+00.00

6/23/16
8/2/2018
mgberry
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$$$$$$$$SYSTIME$$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

8/17/99

REVISIONS

6/14/2018	PARCEL 2 - REVISED PDE AND PDE STATION -Y4- 41+16 LT
10/29/2018	PARCEL 2 - REVISED PDE -Y4- STA 41+16 LT 40+80 TO 40+80 LT
	PARCEL 2 = CHANGED PDE STATION -Y4- 41+16 LT TO -L- 303+33 LT
	PARCEL 2 = REVISED PDE STATION -Y4- 40+80 TO 43+00 RT
	PARCEL 2 = ADDED PDE STATION -Y4- 41+16 LT TO -L- 303+33 LT
	PARCEL 2 = REVISED PDE STATION -Y4- 40+80 TO 43+00 RT
	PARCEL 2 = ADDED PDE STATION -Y4- 40+80 RT TO -L- 300+74 LT
7/13/2018	PARCEL 2 - REVISED PDE STATION -Y4- 41+16 LT TO 48+30 LT

PROJECT REFERENCE NO.	SHEET NO.
R-1015	21
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T R REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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NC License No.: F-0105

PERMIT DRAWING
SHEET 84 OF 167

SITE 24

MATCH LINE -Y4- STA. 40+80 SEE SHEET 45

MATCH LINE STA. 296+00 SEE SHEET 20

MATCH LINE STA. 310+00 SEE SHEET 22

MATCH LINE -Y4- STA. 48+30 SEE SHEET 46

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
(2)

NAD 83

-Y4- +89.00
147.00' LT
137.00' LT

-Y4- +00.00
147.00' LT
137.00' LT

N 65°59'32" E

N 18°29'42" W

-Y4DR- POT Sta. 16+03.02

-Y4DET-

-Y4- POT STA.44+71.82 =
-L- POI STA.302+41.24
Δ = 105°30'45.6"

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 869 CY

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 447 CY

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL WW

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 228 CY

15" CAAP W/ELBOWS

TB 2GI

TYPE-III

10' SOIL RD

GATE

BEGIN WW FENCE

2GI-D

GTD

TYPE B-77

ATTENUATOR

15" RCP-IV

24" RCP-IV

15" RCP-IV

FS
SEE DETAIL B

CL I RIP RAP
EST. 20 TONS
EST. 39 SY GF

EXCAVATION

SPECIAL CUT DITCH
SEE DETAIL X

PROP R/W -Y4-
118.00' LT

PUE

WOODS

50' 0' 50' 100' 150'
GRAPHIC SCALE

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SEE SHEET 59 FOR PROFILE -L-
SEE SHEET 83 FOR PROFILE -Y4-
SEE SHEET 90 FOR PROFILE -Y4DR-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

11/15/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	21
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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NC License No. F-0105

PERMIT DRAWING
SHEET 85 OF 167

SITE 24

REVISIONS

8/17/99

7/13/2018 – PARCEL 2 – REVISED POE STATION -Y4- FROM 49+70 48+30 LT
PARCEL 2 – CHANGED POE TO DUE STATION -Y4- 40+80 TO 40+80 LT
PARCEL 2 – REVISED POE STATION -Y4- 41+16 LT TO -L- 303+33 LT
PARCEL 2 – ADDED POE STATION -Y4- 41+16 LT TO -L- 303+33 LT
PARCEL 2 – REVISED POE STATION -Y4- 40+80 TO 43+00 RT
PARCEL 2 – ADDED POE STATION -Y4- 40+80 RT TO -L- 300+74 LT

MATCH LINE -Y4- STA. 40+80 SEE SHEET 45

MATCH LINE STA. 296+00 SEE SHEET 20

MATCH LINE STA. 310+00 SEE SHEET 22

MATCH LINE -Y4- STA. 48+30 SEE SHEET 46

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

+89.00 -Y4-
147.00' LT
137.00' LT

+00.00 -Y4-
147.00' LT
137.00' LT

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 447 CY

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL WW

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 869 CY

-Y4DR- POT Sta. 16+03.02

N 65° 59' 32" E

N 8° 29' 42" W

15" CAAP W/ELBOWS

15" RCP-IV

24" RCP-IV

TYPE-III

TYPE B-77

ATTENUATOR

2GI-D

GTD

BEGIN WW FENCE

10' SDIL RD

-Y4DET-

-Y4- POT STA 44+71.82 =
-L- POT STA 302+41.24
Δ = 105° 30' 45.6"

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 228 CY

PROP R/W -Y4-
118.00' LT

PUE

CL I RIP RAP
EST. 20 TONS
EST. 39 SY GF

EXCAVATION

SPECIAL CUT DITCH
SEE DETAIL X

FS
SEE DETAIL B

WOODS

50' 0' 50' 100' 150'
GRAPHIC SCALE

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SEE SHEET 59 FOR PROFILE -L-
SEE SHEET 83 FOR PROFILE -Y4-
SEE SHEET 90 FOR PROFILE -Y4DR-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

11/15/2018
mgberry
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-1015	22
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER — T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER — Brock E. Anderson

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NC License No.: F-0105

PERMIT DRAWING
SHEET 86 OF 167

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NAD 83

310 315 320

SITE 24

W42

MATCH LINE STA. 310+00 SEE SHEET 21

MECH. CLEARING

EXCAVATION

SPECIAL CUT 6' BASE DITCH SEE DETAIL Y

SPECIAL CUT 6' BASE DITCH SEE DETAIL Z

Q10 = 23cfs
V10 = 2.0fps

EXCAVATION

RIDING TRAIL

-L- N 8° 29' 42.1" W

EXCAVATION

SPECIAL CUT DITCH SEE DETAIL X

Q10 = 1.2cfs
V10 = 2.1fps

FILL EXISTING CHANNEL AND GRADE TO DRAIN

GRADE TO DRAIN

GRADE TO DRAIN

BEGIN WW FENCE

END WW FENCE

2GI-D

FS SEE DETAIL B

1.5' RIP-RAP

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

WOODS

MATCH LINE STA. 324+00 SEE SHEET 23

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

2

EDWARD J. CIESZKO (ESTATE)

50' 0' 50' 100' 150'
GRAPHIC SCALE

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

SEE SHEETS 60 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$SIGNATURE$$$$

11/15/2018
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-1015	22
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brook E. Anderson

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NC License No.: F-0105

PERMIT DRAWING SHEET 87 OF 167

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NAD 83

310 315 320

SITE 24

W42

Q10 = 23cfs
V10 = 2.0fps

SPECIAL CUT 6' BASE DITCH SEE DETAIL Y

SPECIAL CUT 6' BASE DITCH SEE DETAIL Z

MECH. CLEARING

EXCAVATION

HW

RIDING TRAIL

-L- N 8° 29' 42" W

EXCAVATION

SPECIAL CUT DITCH SEE DETAIL X

Q10 = 1.2cfs
V10 = 2.1fps

FILL EXISTING CHANNEL AND GRADE TO DRAIN

GRADE TO DRAIN

GRADE TO DRAIN

BEGIN WW FENCE

END WW FENCE

2GI-D

FS SEE DETAIL B

CL B RIP RAP EST. 1 TON EST. 5 SY GF

WOODS

WOODS

MATCH LINE STA. 310+00 SEE SHEET 21

MATCH LINE STA. 324+00 SEE SHEET 23

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

2

EDWARD J. CIESZKO (ESTATE)

50' 0' 50' 100' 150'
GRAPHIC SCALE

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

SEE SHEETS 60 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

11/15/2018
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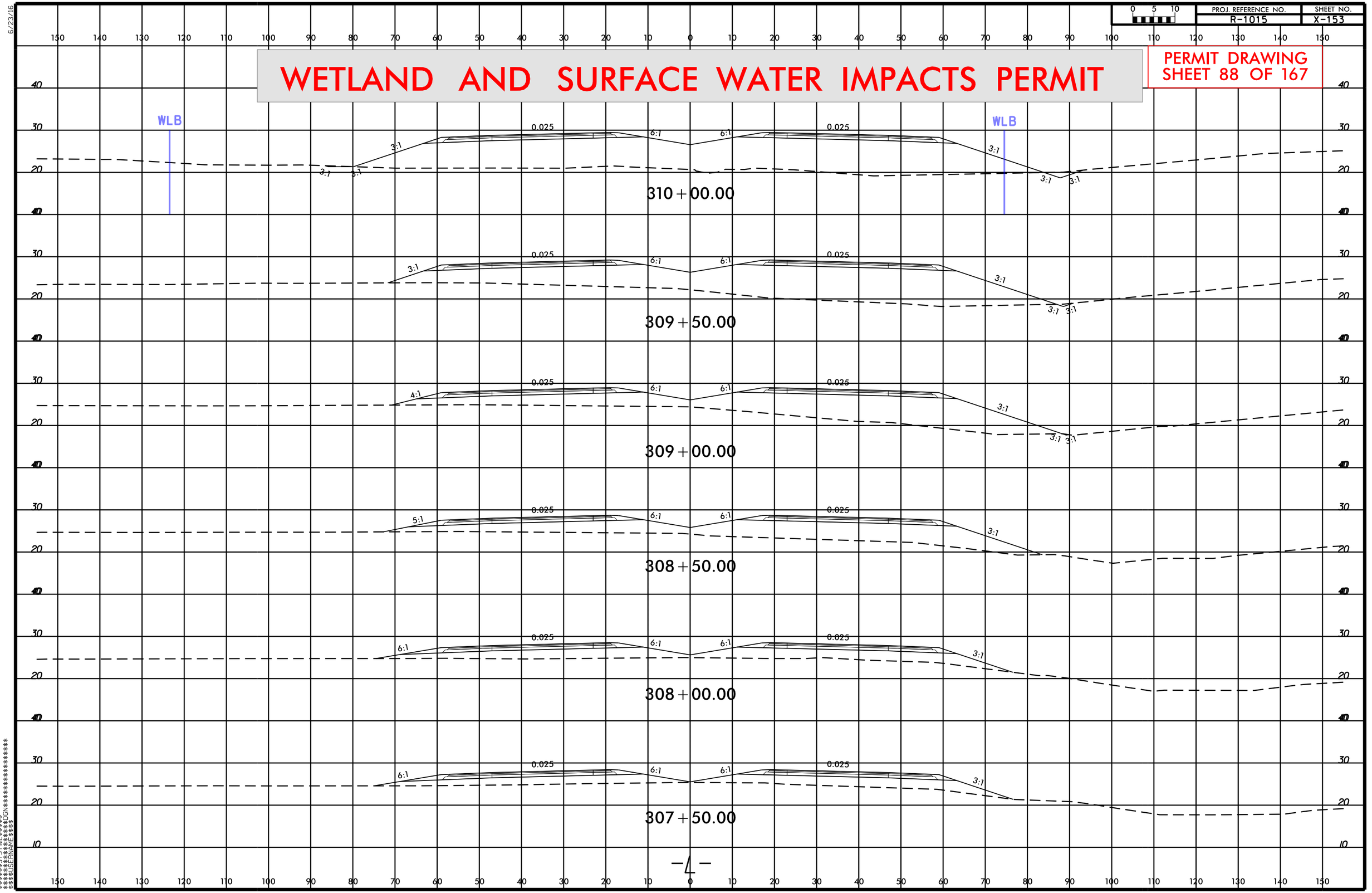
WETLAND AND SURFACE WATER IMPACTS PERMIT



PROJECT REFERENCE NO.	SHEET NO.
R-1015	23
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER — T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER — Brook E. Anderson

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NC License No.: F-0105

PERMIT DRAWING SHEET 89 OF 167

8/17/99

REVISIONS

7/13/2018 - PARCEL 6 - ELIMINATED PDE STATION -L- 329+85 TO 335+46 RT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

(2)

NAD 83

325 330 335

SITE 25A

W42

Q10 = 17.9cfs
V10 = 1.62fps

SPECIAL CUT 6' BASE DITCH SEE DETAIL Z

Q10 = 83.1cfs
V10 = 1.0fps

SPECIAL CUT 8' BASE DITCH SEE DETAIL D

EXCAVATION

EDWARD J. CIESZKO (ESTATE)

EXCAVATION
Q10 = 80.3cfs
V10 = 4.6fps

SPECIAL CUT 8' BASE DITCH SEE DETAIL D

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

CHORD

MATCH LINE STA. 324+00 SEE SHEET 22

15" RCP-IV

-L- N 8° 29' 42.1" W

2GI-D 2GI-D

-BL-55

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

W42

CL I RIP RAP
EST. 57 TONS
EST. 104 SY GF

WOODS

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

FS SEE DETAIL B

2GI

-BL-56

CLASS I RIP RAP
EST. 57 TONS
EST. 104 SY GF

SPECIAL CUT 8' BASE DITCH SEE DETAIL D

EXCAVATION

Q10 = 164.2cfs
V10 = 4.79fps

Q10 = 164.2cfs
V10 = 3.0fps

-L- TS Sta. 335+76.98

MATCH LINE STA. 338+00 SEE SHEET 24

SITE 25B

EDWARD J. CIESZKO (ESTATE)

(6)

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEET 60 FOR PROFILE -L-
SEE SHEET 59 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$SITENAME$$$$

11/15/2018
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8/17/99

REVISIONS

7/13/2018 - PARCEL 6 - ELIMINATED PDE STATION -L- 329+85 TO 335+46 RT

PROJECT REFERENCE NO.	SHEET NO.
R-1015	23
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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NC License No.: F-0105

PERMIT DRAWING
SHEET 90 OF 167

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
(2)

NAD 83

325 330 335

SITE 25A

EDWARD J. CIESZKO (ESTATE)

EXCAVATION
Q10 = 80.3cfs
V10 = 4.6fps

W42

SPECIAL CUT 8' BASE DITCH SEE DETAIL Z

Q10 = 17.9cfs
V10 = 1.62fps

Q10 = 83.1cfs
V10 = 1.0fps

SPECIAL CUT 8' BASE DITCH SEE DETAIL D

SPECIAL CUT 8' BASE DITCH SEE DETAIL D

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CHORD

EXCAVATION

WOODS

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

MATCH LINE STA. 324+00 SEE SHEET 22

15" RCP-IV

-L- N 8° 29' 42.1" W

2GI-D 2GI-D -BL-55

18" RCP-IV

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

W42

CL I RIP RAP EST. 57 TONS EST. 104 SY GF

SPECIAL CUT 8' BASE DITCH SEE DETAIL D

EXCAVATION

Q10 = 164.2cfs
V10 = 4.79fps

Q10 = 164.2cfs
V10 = 3.0fps

FS SEE DETAIL A

2GI -BL-56

FS SEE DETAIL B

2GI

27" RCP-IV

CLASS I RIP RAP EST. 57 TONS 57 SY GF

CLASS I RIP RAP EST. 57 TONS EST. 104 SY GF

W42

CHORD

-L- TS Sta. 335+76.98

MATCH LINE STA. 338+00 SEE SHEET 24

SITE 25B

EDWARD J. CIESZKO (ESTATE)

(6)

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEET 60 FOR PROFILE -L- SHEET 59 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

11/15/2018
mgberry
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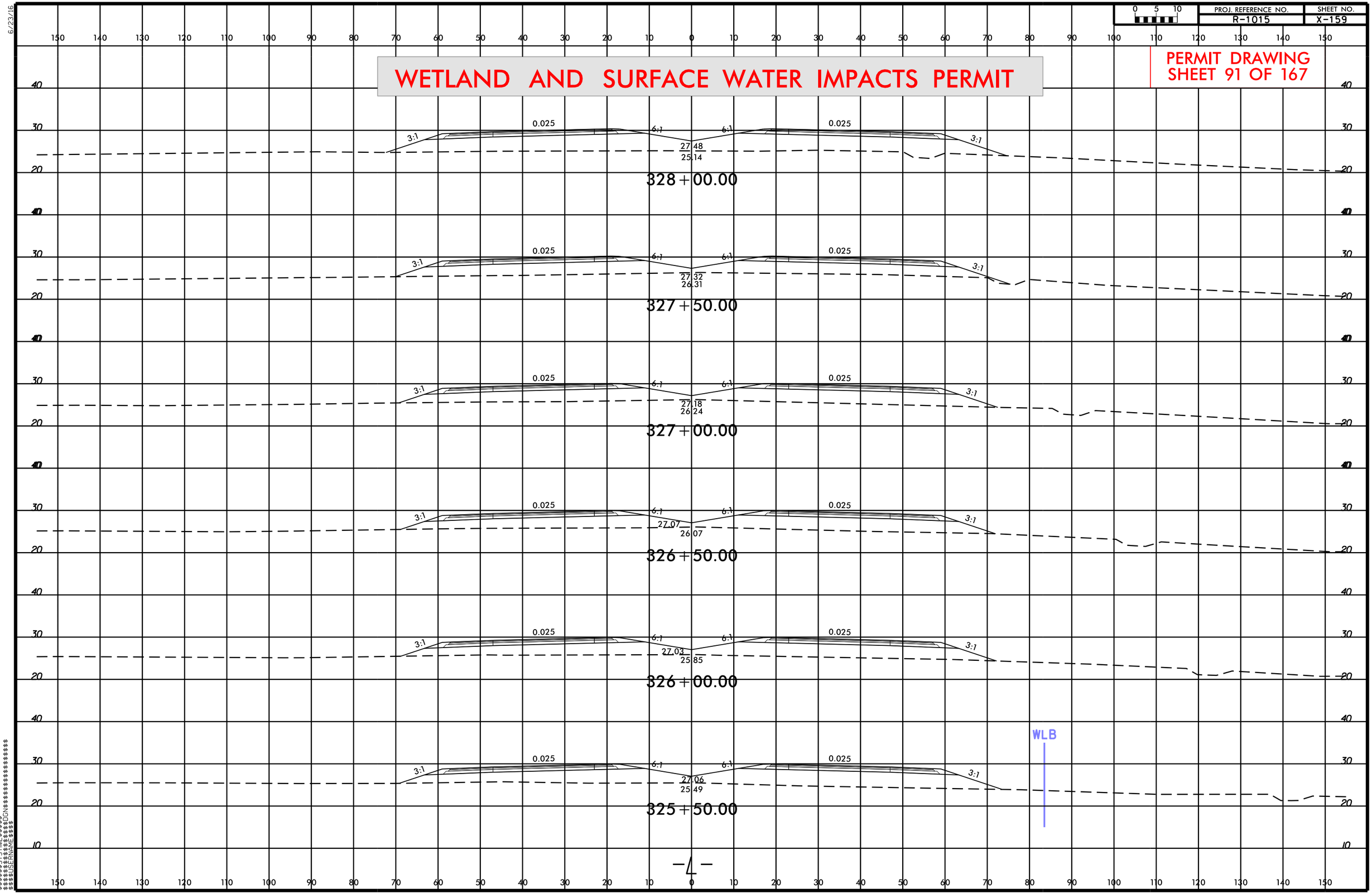
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-159

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 91 OF 167



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dgn Version
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-161

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 92 OF 167

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

40 30 20 10

0.025 6:1 6:1 0.025 3:1 3:1 3:1 3:1

334+00.00

333+50.00

333+00.00

WLB WLB

332+50.00

332+00.00

331+50.00

8/2/2018
mgberry
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 93 OF 167

8/17/99

REVISIONS

SITE 27

SITE 26

SITE 28A

SITE 28B

NAD 83

LARRY S. PAUL (7)

EDWARD J. CIESZKO (ESTATE) (6)

DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST (2)

Q10 = 100cfs
V10 = 3.2cfs

Q10 = 2cfs
V10 = 1.5fps

SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

CELL TOWER AND BUILDING LOCATION APPROXIMATE WITHIN FENCE

METER BOX

18' GRAVEL ROAD

345

350

WOODS

RETAIN PIPES

32" CONC.

SPECIAL CUT 8' BASE DITCH SEE DETAIL CCC

BEGIN WW FENCE

END WW FENCE

MAINTAIN EXISTING DITCH

60" RCP-III, BURIED 1'

MECH. CLEARING

FILL POND TO NATURAL GROUND

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL I RIP RAP EST. 10 TONS EST. 75 SY GF

GREU (TL-3)

8:1 CAT-1

FILL IN WETLANDS

POWERLINE EASEMENT

-L- TS Sta. 351+68.60

MATCH LINE STA. 338+00 SEE SHEET 23

-L- SC Sta. 339+36.98

-L- CS Sta. 344+96.51

-L- ST Sta. 348+56.51

MATCH LINE STA. 352+00 SEE SHEET 25

N 7° 34' 03.4" E

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL I RIP RAP EST. 57 TONS EST. 104 SY GF

DO NOT CUT/REMOVE TREES OUTSIDE OF R/W

TIE TO EXISTING CHANNEL

SPECIAL CUT 3' BASE DITCH SEE DETAIL AA

50' 0' 50' 100' 150'
GRAPHIC SCALE

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

SEE SHEETS 6I FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$$$$$$$$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

moffatt & nichol
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(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 94 OF 167

8/17/99

REVISIONS

SITE 27

SITE 26

SITE 28A

SITE 28B

NAD 83

LARRY S. PAUL

EDWARD J. CIESZKO (ESTATE)

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

Q10 = 100cfs
V10 = 3.2cfs

Q10 = 2cfs
V10 = 1.5fps

SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

MECH. CLEARING

FILL IN WETLANDS

MATCH LINE STA. 338+00 SEE SHEET 23

MATCH LINE STA. 352+00 SEE SHEET 25

-L- SC Sta. 339+36.59

-L- CS Sta. 344+96.51

-L- ST Sta. 348+56.51

-L- TS Sta. 351+68.60

RETAIN PIPES

MAINTAIN EXISTING DITCH

SPECIAL CUT 8' BASE DITCH SEE DETAIL CCC

SPECIAL CUT 3' BASE DITCH SEE DETAIL AA

FILL POND TO NATURAL GROUND

CELL TOWER AND BUILDING LOCATION APPROXIMATE WITHIN FENCE

METER BOX

18' GRAVEL ROAD

POWERLINE EASEMENT

WOODEN BULKHEAD

DO NOT CUT/REMOVE TREES OUTSIDE OF R/W

TIE TO EXISTING CHANNEL

60" RCP-III, BURIED 1'

32" CONC.

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 10 TONS EST. 75 SY GF

CL B RIP RAP EST. 57 TONS EST. 104 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

SEE DETAIL B

BEGIN WW FENCE

END WW FENCE

GREU TL-3

8:1 CAT-1

N. T. 34° 03.4' E

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEETS 6I FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/15/2018
mgberry
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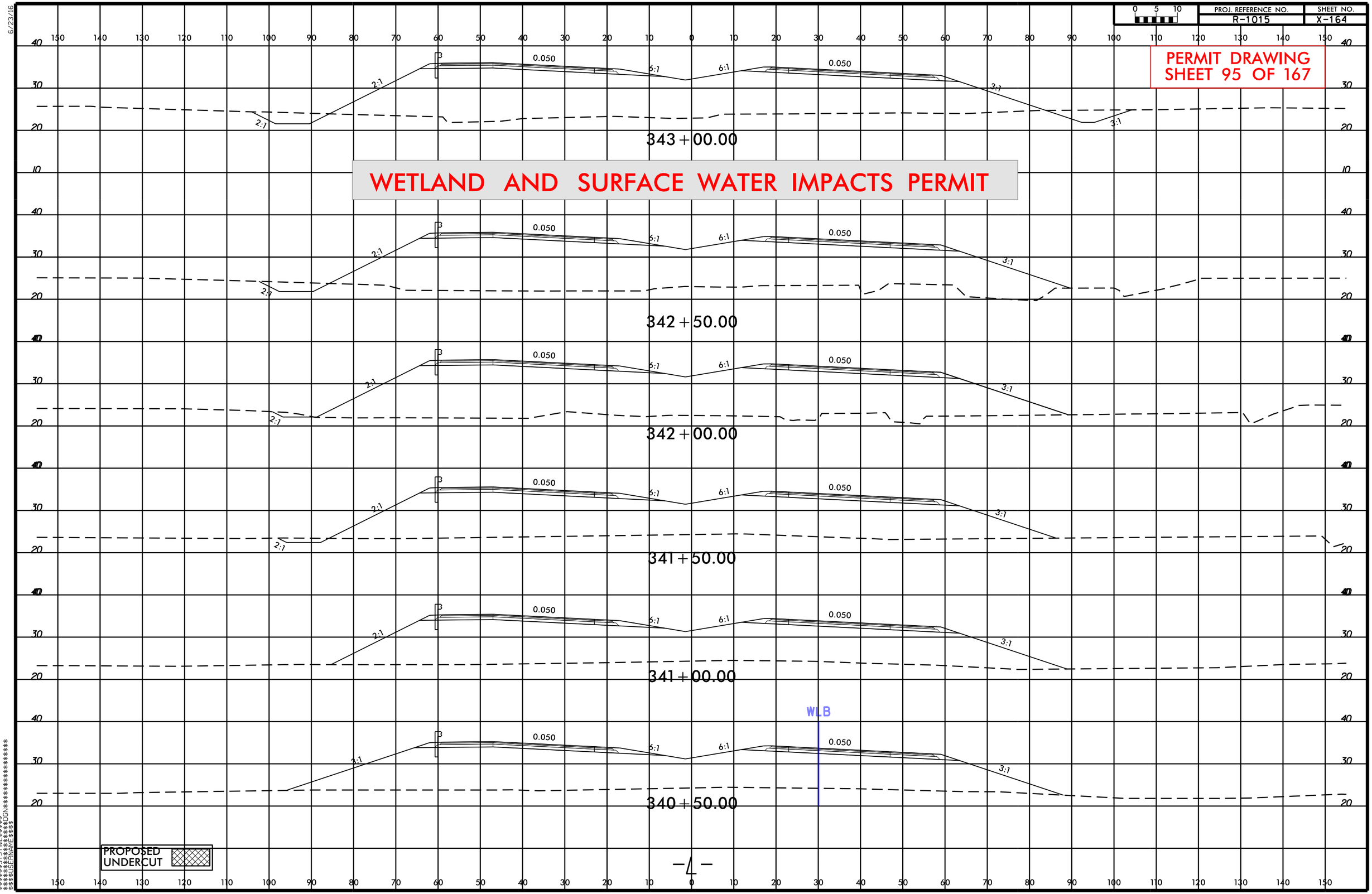
$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-164

PERMIT DRAWING
SHEET 95 OF 167

WETLAND AND SURFACE WATER IMPACTS PERMIT



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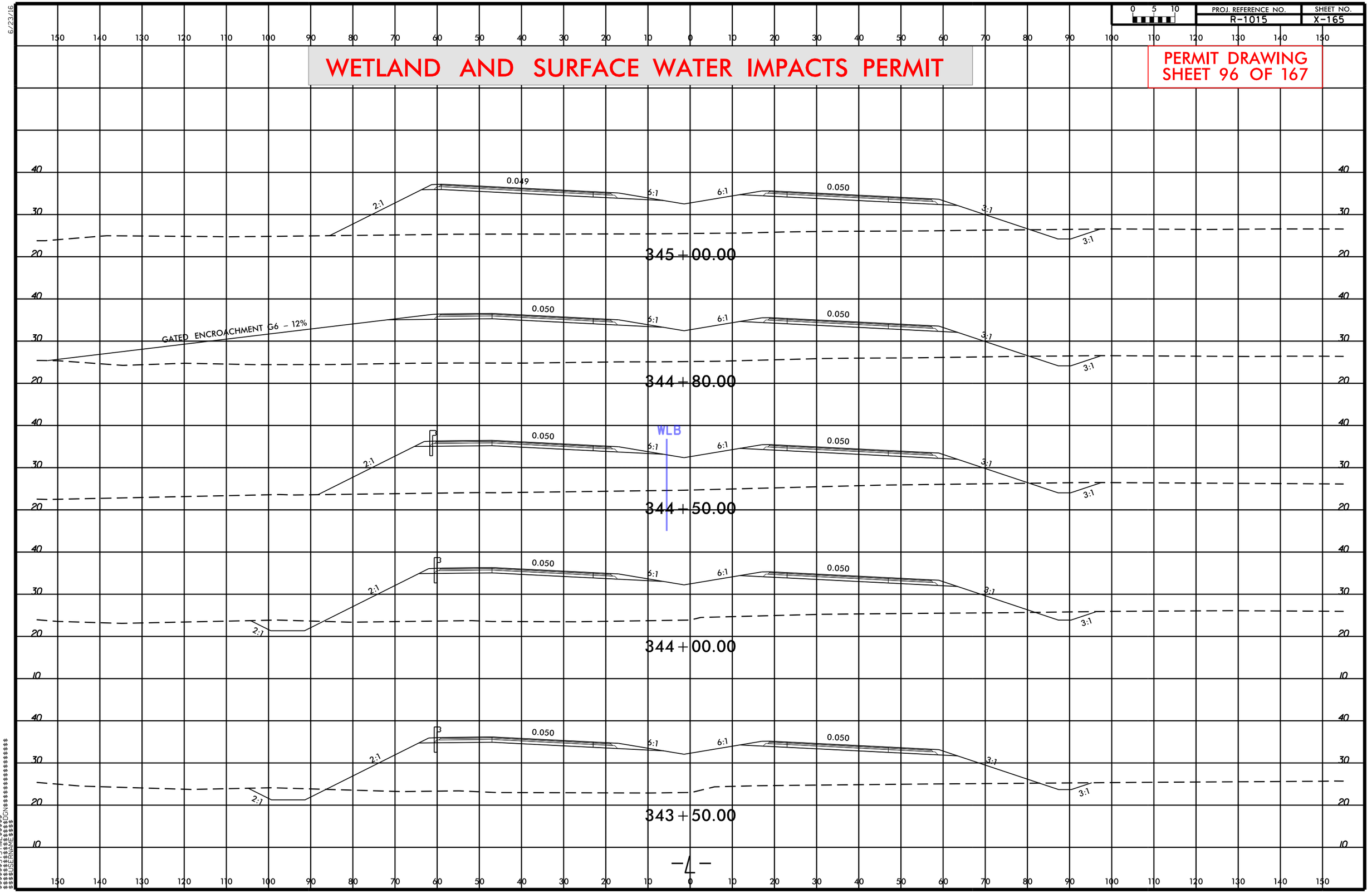
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 96 OF 167



8/2/2018
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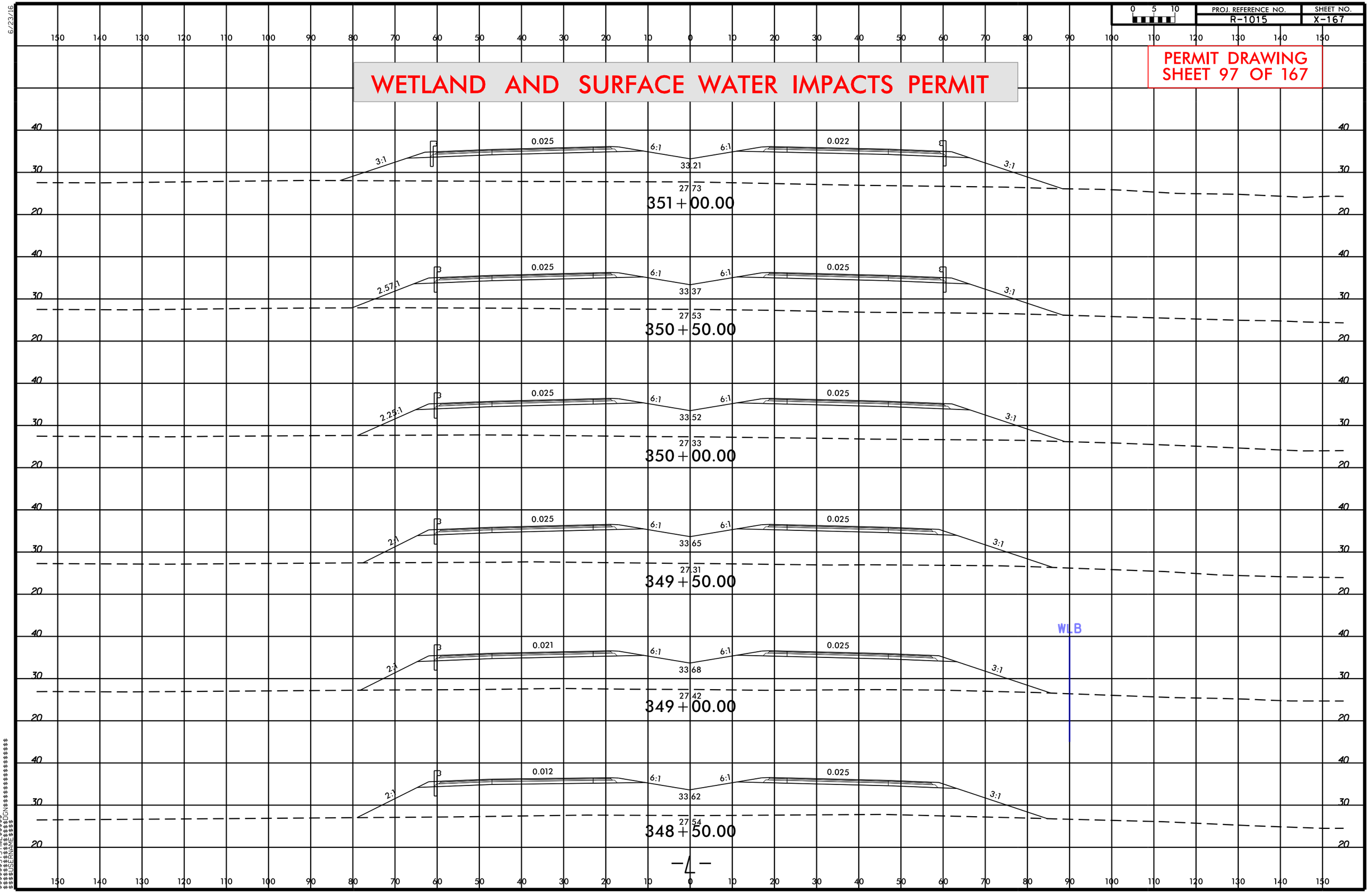
$$$$USERNAME$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-167

PERMIT DRAWING
SHEET 97 OF 167

WETLAND AND SURFACE WATER IMPACTS PERMIT



8/2/2018
mmoore
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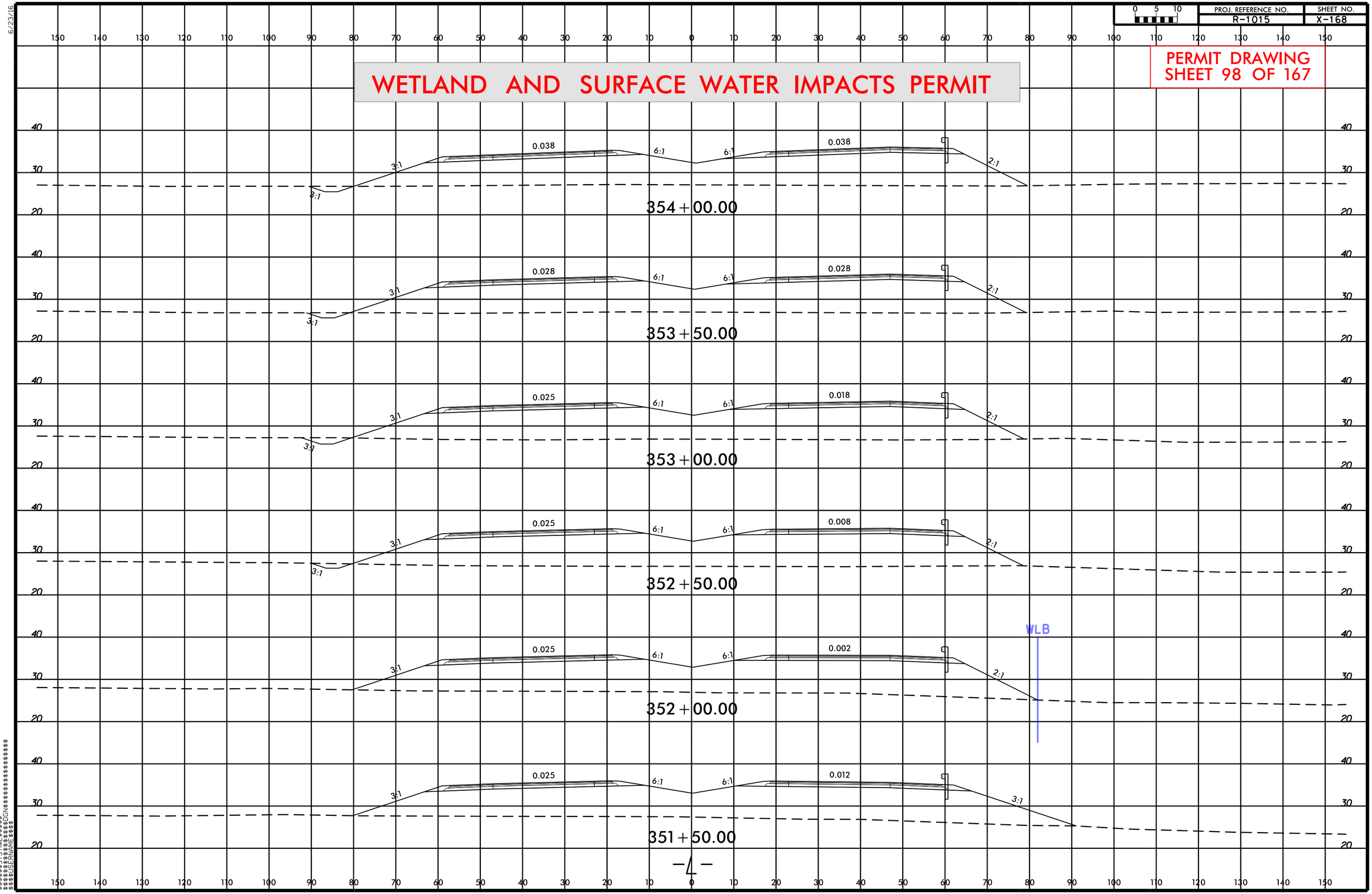
$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-168

PERMIT DRAWING
SHEET 98 OF 167

WETLAND AND SURFACE WATER IMPACTS PERMIT



8/2/2018
mmoore
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$$$$$$$SYSTIME$$$$$
$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER — T R REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER — Brock E Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 99 OF 167

REVISIONS
8/17/99 -
7/13/2018 - PARCEL 2 - CHANGED PDE TO TDE STATION -L- 356+30 TO 356+70 RT
PARCEL 2 - REVISED TDE STATION 363+98 TO 364+30 RT

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

SITE 29

SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

355 360 365

Q10 = 4.8cfs
V10 = 1.7fps

-L- SC Sta. 355+58.60

Q10 = 19.2cfs
V10 = 1.8fps

W49

SPECIAL CUT 3' BASE DITCH SEE DETAIL AA

SPECIAL CUT 8' BASE DITCH SEE DETAIL D

SPECIAL CUT 6' BASE DITCH SEE DETAIL Z

WOODS

MATCH LINE STA. 352+00 SEE SHEET 24

MATCH LINE STA. 366+00 SEE SHEET 26

2GI FS SEE DETAIL B

15" RCP-IV

30" RCP-IV

-L-

CL B RIP RAP EST. 1 TON EST. 5 SY GF

W47

W48

CLASS I RIP RAP EST. 10 TONS EST. 5 SY GF

TDE

DO NOT CUT/REMOVE TREES OUTSIDE OF R/W

STANDARD 6' BASE DITCH SEE DETAIL H S=0.000 FT/FT DDE= 40 CY

TIE PROP. DITCH TO NATURAL GROUND

CL B RIP RAP EST. 8 TONS EST. 21 SY GF

SITE 28B

SITE 30

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

50' 0' 50' 100' 150'
GRAPHIC SCALE

DENOTES MECHANIZED CLEARING

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

SEE SHEET 6I FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

11/15/2018
mgberry
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 100 OF 167

REVISIONS

7/13/2018 - PARCEL 2 - CHANGED PDE TO TDE STATION -L- 356+30 TO 356+70 RT
PARCEL 2 - REVISED TDE STATION 363+98 TO 364+50 RT

8/17/99

SITE 29

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

355 360 365

Q10 = 4.8cfs
V10 = 1.7fps

-L- SC Sta. 355+58.60

Q10 = 19.2cfs
V10 = 1.8fps

W49

MATCH LINE STA. 352+00 SEE SHEET 24

MATCH LINE STA. 366+00 SEE SHEET 26

SPECIAL CUT 3' BASE DITCH SEE DETAIL AA

SPECIAL CUT 8' BASE DITCH SEE DETAIL D

SPECIAL CUT 6' BASE DITCH SEE DETAIL Z

WOODS

2GI FS SEE DETAIL B

15" RCP

24" RCP

30" RCP

2GH 18" RCP-10' 2GI

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CLASS I RIP RAP EST. 10 TONS EST. 5 SY GF

TOE

DO NOT CUT/REMOVE TREES OUTSIDE OF R/W

STANDARD 6' BASE DITCH SEE DETAIL H S = 0.000 FT/FT DDE = 40 CY

TIE PROP. DITCH TO NATURAL GROUND

TDE

CL B RIP RAP EST. 8 TONS EST. 21 SY GF

W47

W48

SITE 28B

SITE 30

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

50' 0' 50' 100' 150'
GRAPHIC SCALE

* * * * DENOTES MECHANIZED CLEARING

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

SEE SHEET 6I FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

11/15/2018
mgberry
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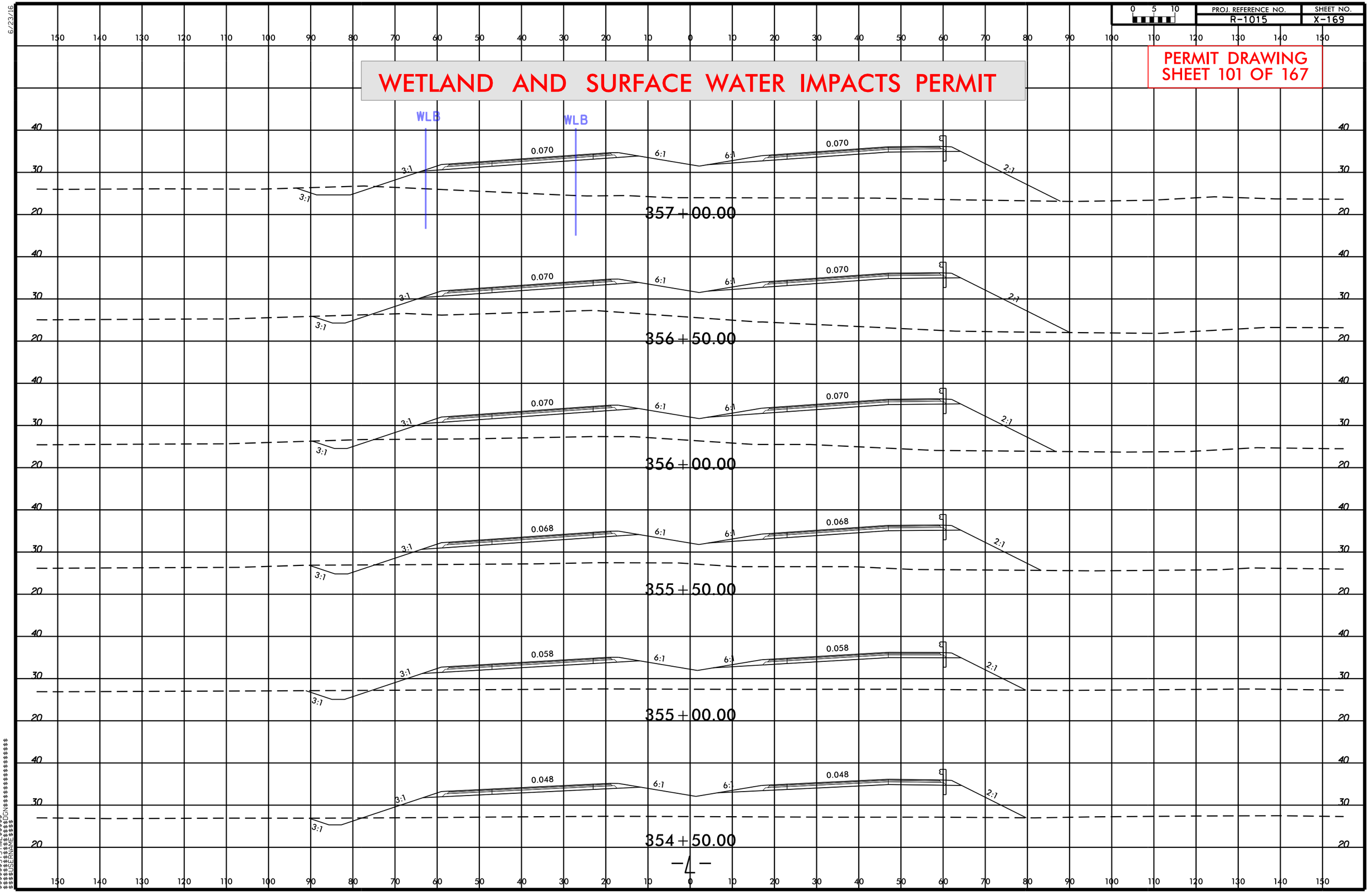
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-169

PERMIT DRAWING
SHEET 101 OF 167

WETLAND AND SURFACE WATER IMPACTS PERMIT



8/2/2018
mgberry
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$$$$$$$SYSTIME$$$$$$
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	26
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 102 OF 167

REVISIONS

8/17/99 -
PARCEL 2 -- ELIMINATED PDE STATION -L- 369+50 TO 369+05 RT
PARCEL 2 -- ELIMINATED TCE STATION -L- 369+50 TO 369+05 RT
PARCEL 2 -- ADDED TCE STATION -L- 379+30 TO 380+00 RT
PARCEL 2 -- CHANGED TCE TO PDE AND REVISED AREA STATION -L- 378+35 TO 378+66 LT
PARCEL 2 -- REVISED TCE AREA STATION -L- 377+58 TO 378+80 LT

7/13/2018 -

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

SITE 31

W51

W50

MATCH LINE STA. 366+00 SEE SHEET 25

MATCH LINE STA. 380+00 SEE SHEET 27

-L- CS Sta. 375+23.56

-L- ST Sta. 379+13.56

-L-

370

375

POWERLINE EASEMENT

WOODS

SPECIAL CUT 6' BASE DITCH SEE DETAIL Z

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

MAINTAIN EXISTING DITCH

TIE TO EXISTING DITCH

STANDARD 2' BASE DITCH SEE DETAIL V S=0.002 FT/FT DDE= 12CY

CL B RIP RAP EST. 1 TON EST. 5 SY GF

REMOVE

15" RCP

FS SEE DETAIL B

CL I RIP RAP EST. 15 TONS EST. 30 SY GF

STANDARD 2' BASE DITCH SEE DETAIL V S=0.000 FT/FT DDE= 142CY

N 38° 28.3' W

50' 0' 50' 100' 150'
GRAPHIC SCALE

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
(2)

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

SEE SHEETS 62 FOR PROFILE -L-

SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/15/2018
mgberry
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$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGNS$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	26
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
919 781 4626 VOICE 919 781 4869 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 103 OF 167

REVISIONS

7/13/2018 -
PARCEL 2 - ELIMINATED PDE STATION -L- 369+50 TO 369+05 RT
PARCEL 2 - ADDED PDE STATION -L- 379+30 TO 380+00 RT
PARCEL 2 - ADDED TCE STATION -L- 378+35 TO 378+66 LT
PARCEL 2 - CHANGED TCE TO PDE AND REVISED AREA STATION -L- 378+80 LT TO 379+00
PARCEL 2 - REVISED TCE AREA STATION -L- 377+58 TO 378+80 LT

8/17/99

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

SITE 31

W51

W50

MATCH LINE STA. 386+00 SEE SHEET 25

MATCH LINE STA. 380+00 SEE SHEET 27

-L- CS Sta. 375+23.56

-L- ST Sta. 379+13.56

POWERLINE EASEMENT

370

375

WOODS

SPECIAL CUT 6' BASE DITCH SEE DETAIL Z

CL B RIP RAP EST. 9 TONS EST. 7 SY GF

MAINTAIN EXISTING DITCH

TIE TO EXISTING DITCH

STANDARD 2' BASE DITCH SEE DETAIL V S=0.002 FT/FT DDE= 12CY

CL B RIP RAP EST. 1 TON EST. 5 SY GF

REMOVE (TYP.)

N 38° 28' 28.3" W

FS SEE DETAIL

CL I RIP RAP EST. 15 TONS EST. 30 SY GF

STANDARD 2' BASE DITCH SEE DETAIL V S=0.000 FT/FT DDE= 142CY

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
(2)

50' 0' 50' 100' 150'
GRAPHIC SCALE

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

SEE SHEETS 62 FOR PROFILE -L-

SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

11/15/2018
mgberry
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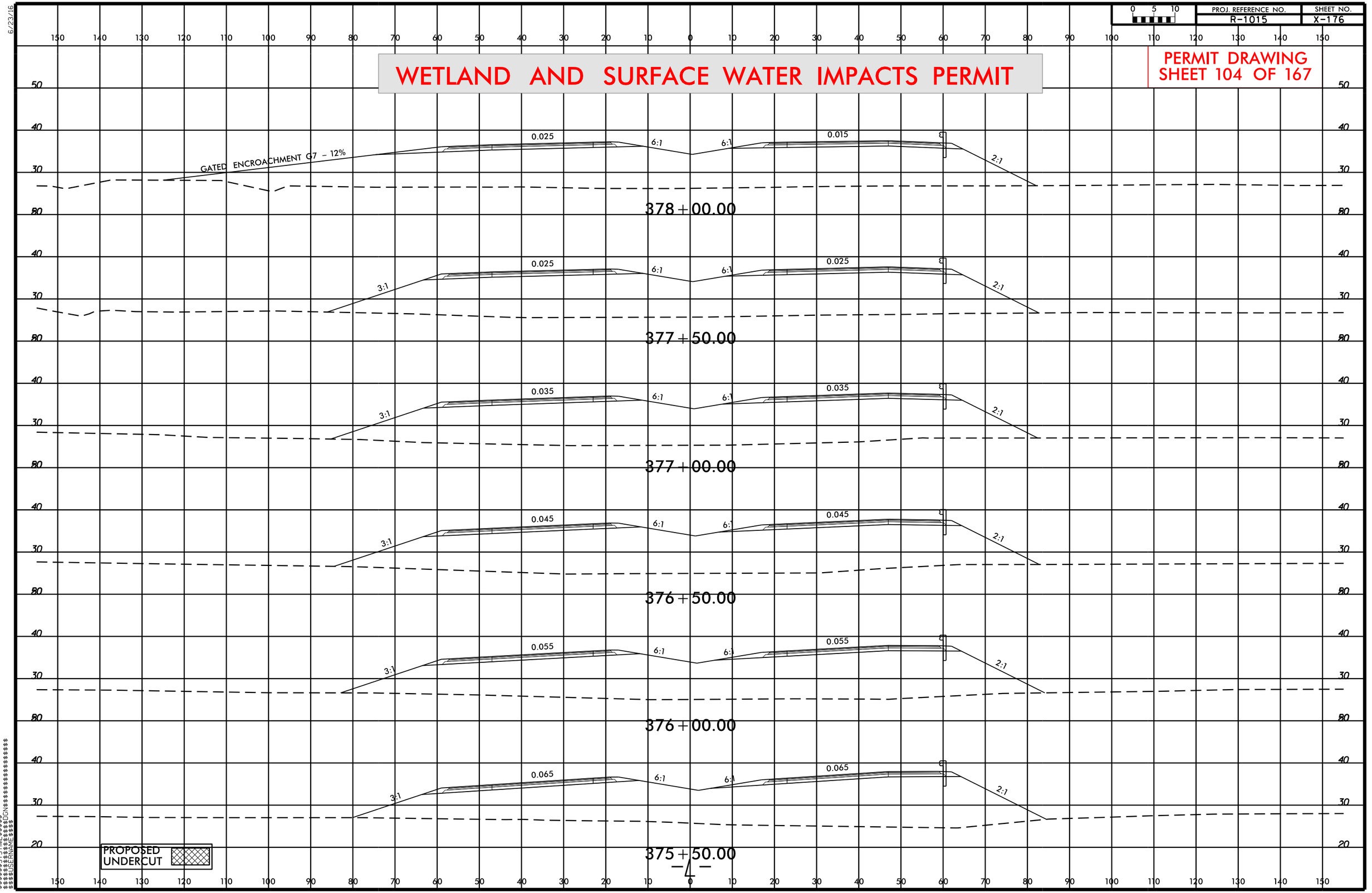
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-176

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 104 OF 167



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mpowers
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	27
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brock E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 105 OF 167

REVISIONS

7/13/2018 - PARCEL 2 - ADDED TDE STATION -L- 380+00 TO 381+12 RT.
PARCEL 2 - REVISED PDE AREA STATION -L- 381+12 TO 381+40 RT

8/17/99

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

WEYERHAUSER COMPANY

NAD 83

380 385 390

W51

8

SITE 32

MATCH LINE STA. 380+00 SEE SHEET 26

MATCH LINE STA. 394+00 SEE SHEET 28

CHORD

WOODS

8:1 CAT-1

2GI

FS
SEE DETAIL B

N 38° 07' 28.3" W

-L-

FILL IN WETLANDS

BEGIN WW FENCE
END WW FENCE

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

30' RCP

PDE

TDE

-L- TS Sta. 387+18.49

-L- SC Sta. 390+14.49

SITE 31

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEET 62 FOR PROFILE -L-
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$ON$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	27
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brock E. Anderson

moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 106 OF 167

REVISIONS
8/17/99 -
7/13/2018 - PARCEL 2 - ADDED TDE STATION -L- 380+00 TO 381+12 RT.
PARCEL 2 - REVISED PDE AREA STATION -L- 381+12 TO 381+40 RT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NAD 83

WEYERHAUSER COMPANY

W51

380 385 390

8

SITE 32

MATCH LINE STA. 380+00 SEE SHEET 26

MATCH LINE STA. 394+00 SEE SHEET 28

CHORD

WOODS

8:1 CAT-1

N 38° 07' 28.3" W

-L-

2GI

FS
SEE DETAIL B

FILL IN WETLANDS

BEGIN WW FENCE
END WW FENCE

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

-L- TS Sta. 387+18.49

-L- SC Sta. 390+14.49

SITE 31

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEET 62 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

11/15/2018
mgberry
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	28
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 107 OF 167

REVISIONS
7/13/2018 - PARCEL 8 - REVISED TCE STATION -L- 402+60 TO 404+68 RT
PARCEL 8 - REVISED TCE STATION -L- 400+69 TO 403+87 LT

8/17/99

SITE 32

W62

WEYERHAUSER COMPANY

NAD 83

MATCH LINE STA. 394+00 SEE SHEET 27

MATCH LINE STA. 408+00 SEE SHEET 29

-L- CS Sta. 395+70.37

-L- ST Sta. 398+66.37

-DRI- PC Sta. 10+48.90

-DRI- POT Sta. 10+00.00

-DRI- PT Sta. 10+96.04

-DRI- POT Sta. 13+78.96

-DRI- PT Sta. 13+48.23

-DRI- PC Sta. 12+99.96

N 37° 40' 20" E

N 29° 51' 36.9" W

S 85° 00' 22" W

CHORD

GREU (TL-3)

WOODS

CL B RIP RAP EST. 4 TON EST. 5 SY GF

CL I RIP RAP EST. 57 TONS EST. 104 SY GF

72" RCP-III, BURIED 1 FT

15" RCP-III

2GI

FS SEE DETAIL B

GRADE To DRAIN

END WW FENCE

BEGIN WW FENCE

-L-

28.5' GravEL RD

CL B RIP RAP EST. 1 TON EST. 5 SY GF

50' 0' 50' 100' 150'
GRAPHIC SCALE

WEYERHAUSER COMPANY

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

SEE SHEETS 63 FOR PROFILE -L-
SEE SHEETS 91 FOR PROFILE -DRI-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

11/15/2018
mgberry
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8/17/99

REVISIONS

7/13/2018 - PARCEL 8 - REVISED TCE STATION -L- 402+60 TO 404+68 RT
PARCEL 8 - REVISED TCE STATION -L- 400+69 TO 403+87 LT

PROJECT REFERENCE NO.	SHEET NO.
R-1015	28
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 108 OF 167

SITE 32

W62

WEYERHAUSER COMPANY

MATCH LINE STA. 394+00 SEE SHEET 27

MATCH LINE STA. 408+00 SEE SHEET 29

-L- CS Sta. 395+70.37

-L- ST Sta. 398+66.37

-DRI- POT Sta. 10+00.00

-DRI- PC Sta. 10+48.90

-DRI- PT Sta. 10+96.04

-DRI- POT Sta. 13+78.96

-DRI- PT Sta. 13+48.23

-DRI- PC Sta. 12+99.96

N 37° 40' 20.2" E

N 29° 51' 36.9" W

S 85° 00' 22.1" W

CHORD

GREU (TL-3)

WOODS

END WW FENCE

BEGIN WW FENCE

GRADE TO DRAIN

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL I RIP RAP
EST. 57 TONS
EST. 104 SY GF

15" RCP-III

72" RCP-III, BURIED 1 FT

FS
SEE DETAIL B

2GI

25.5' SWEL RD

50' 0' 50' 100' 150'
GRAPHIC SCALE

WEYERHAUSER COMPANY

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

SEE SHEETS 63 FOR PROFILE -L-
SEE SHEETS 91 FOR PROFILE -DRI-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/15/2018
mgberry
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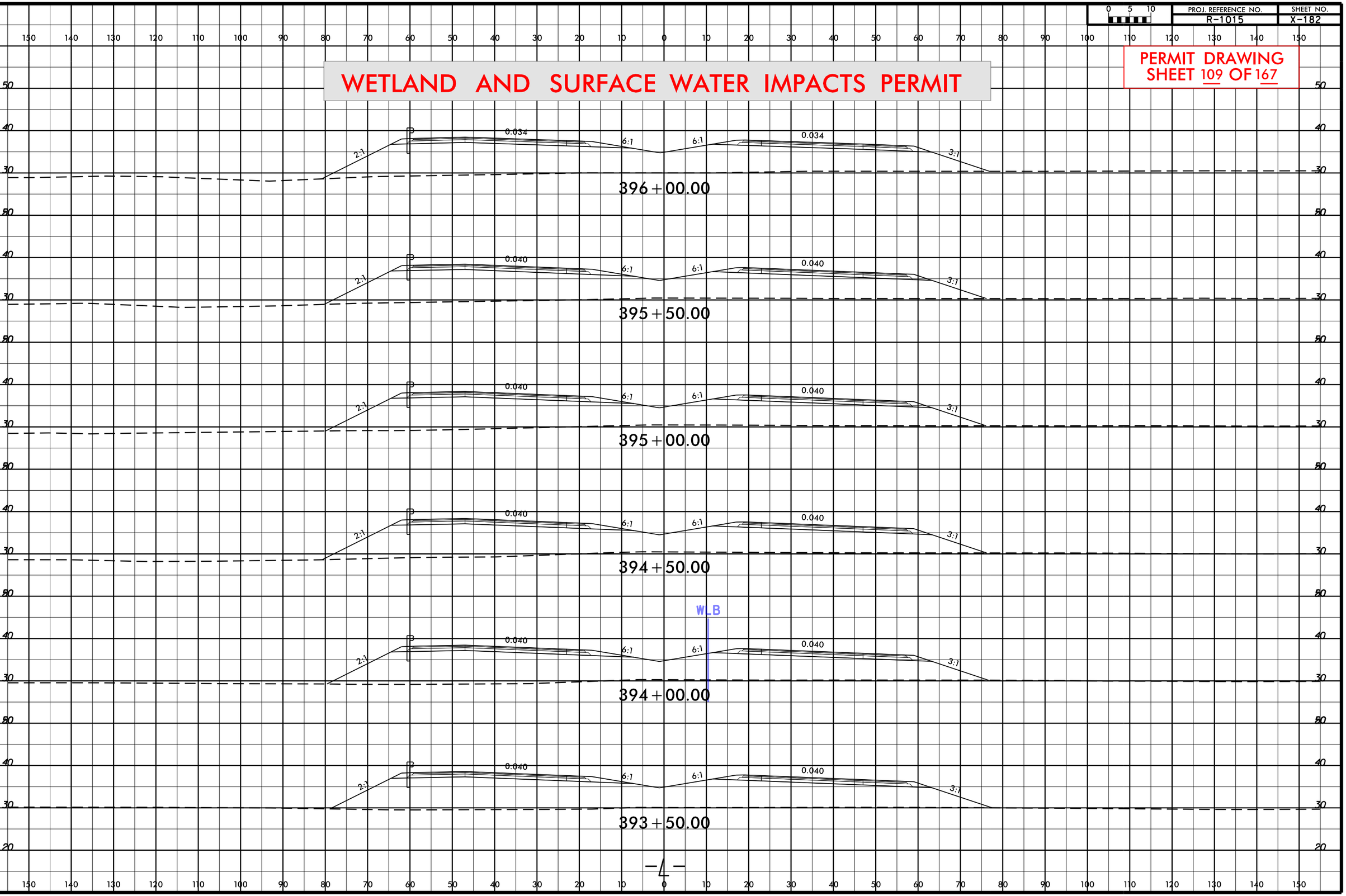
$$$$USERNAME$$$$ $$$$SYSTIME$$$$ $$$$DGN$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-182

PERMIT DRAWING
SHEET 109 OF 167

WETLAND AND SURFACE WATER IMPACTS PERMIT



8/2/2018
mgberry
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$$$$$$$$SYSTIME$$$$$$
$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	29
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER — T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER — Brock E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 110 OF 167

8/17/99

REVISIONS

NAD 83

WEYERHAUSER COMPANY

410 415 420

SITE 33

W65

BM21

BM22

MATCH LINE STA. 408+00 SEE SHEET 28

MATCH LINE STA. 422+00 SEE SHEET 30

-BL-T0

-BL-T1

-BL-T2

-L-

N 29° 51' 36.9" W

48" RCP-III

18" RCP-IV

15" RCP-IV

42" RCP-III

54" CP-III

2GI-D

2GI

FS SEE DETAIL B

CL I RIP RAP
EST. 26 TONS
EST. 50 SY GF

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

CL I RIP RAP
EST. 20 TONS
EST. 39 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

WOODS

W66

SITE 34

WEYERHAUSER COMPANY

50' 0' 50' 100' 150'
GRAPHIC SCALE

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

SEE SHEET 63 FOR PROFILE -L-

SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh29.dgn

$$$$USERNAME$$$$ $$$$SYSTIME$$$$ $$$$DGN$$$$

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-1015	29
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 111 OF 167

NAD 83

WEYERHAUSER COMPANY

SITE 33

W65

MATCH LINE STA. 408+00 SEE SHEET 28

410 415 420

BM21 BM22

-BL-T0 -BL-T1 -BL-T2 -L-

N 29° 51' 36.9" W

48" RCP-III 18" RCP-IV 15" RCP-IV 42" RCP-III 54" RCP-III

2GI-D 2GI-D 2GI

FS SEE DETAIL B FS SEE DETAIL B

CL I RIP RAP EST. 26 TONS EST. 50 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL I RIP RAP EST. 20 TONS EST. 39 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

WOODS

025 250' RW

MATCH LINE STA. 422+00 SEE SHEET 30

W66

SITE 34

WEYERHAUSER COMPANY

50' 0' 50' 100' 150'
GRAPHIC SCALE

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

SEE SHEET 63 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$FILENAME$$$$

11/15/2018
mgberry
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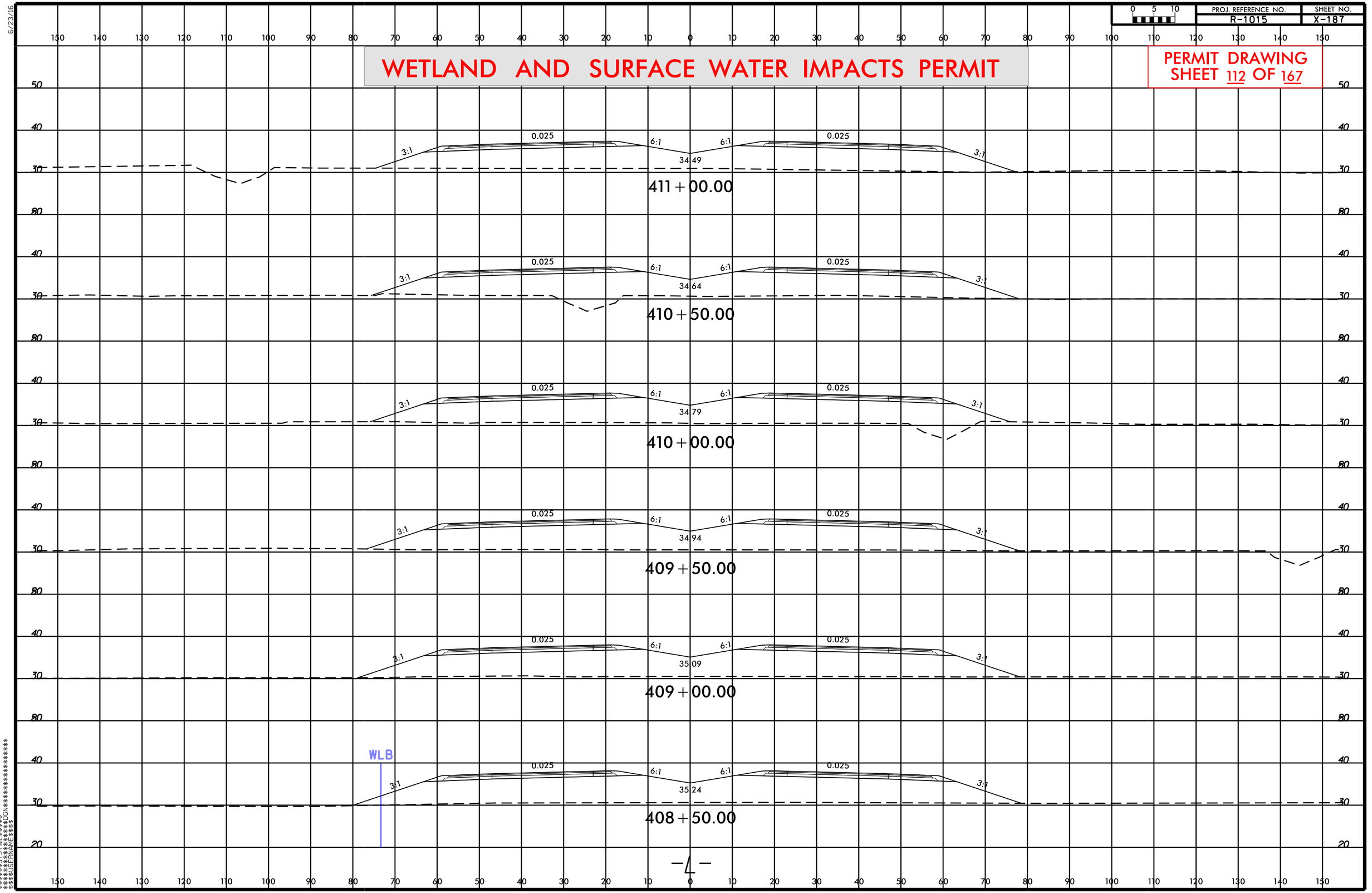
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-187

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 112 OF 167



8/2/2018
mgilkerry
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$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

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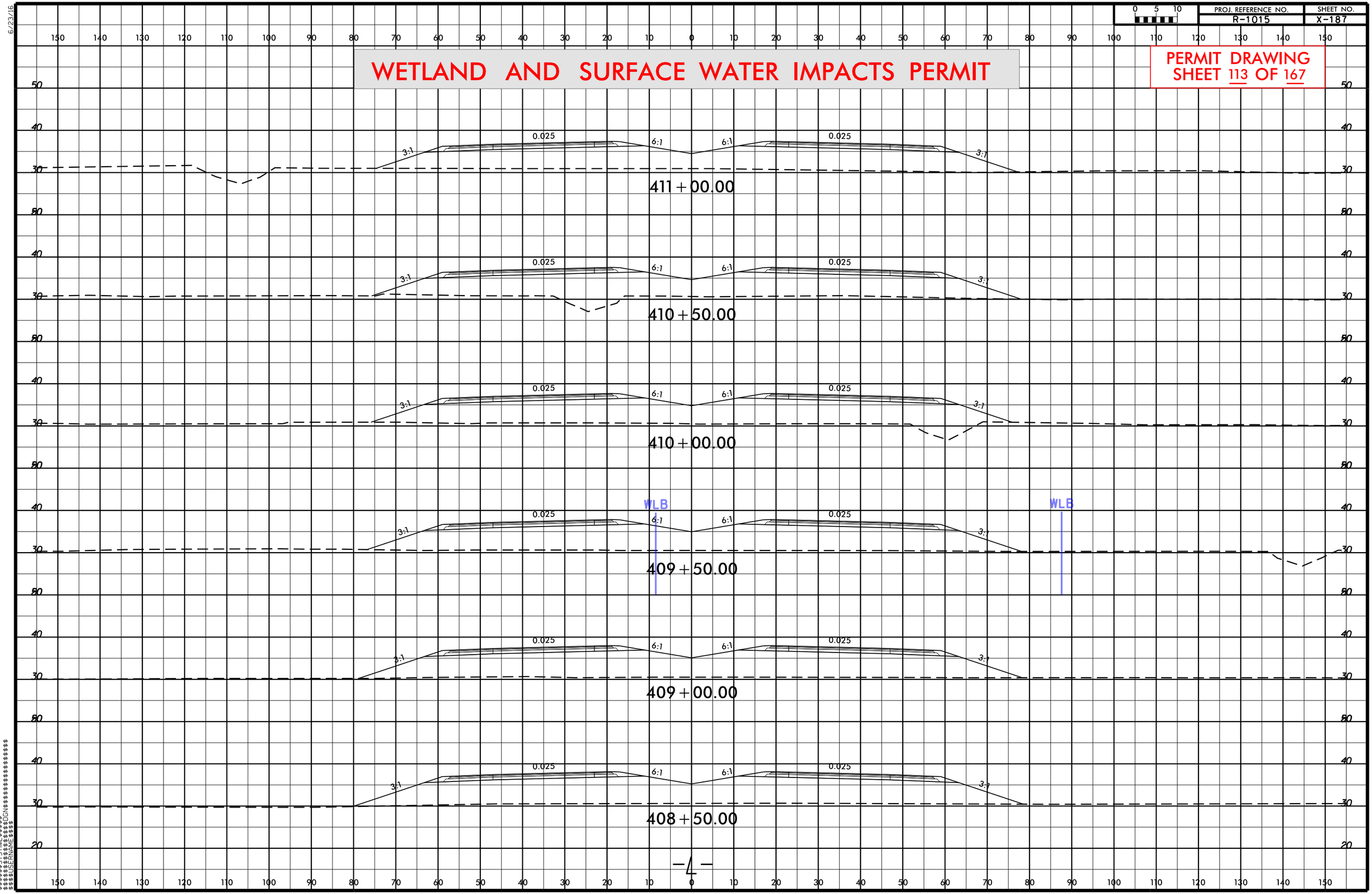
PROJ. REFERENCE NO. R-1015
SHEET NO. X-187

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 113 OF 167



9/2/2018
mmorrow
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$$$$$$$$SYSTIME$$$$$$
$$$$$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	30
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 114 OF 167

SITE 35A

REVISIONS
7/13/2018 - PARCEL 2 - CHANGED PDE TO TCE STATION -L- 431+98 TO 432+98 RT
PARCEL 2 - CHANGED PDE TO TCE STATION -L- 432+68 TO 433+42 LT

WEYERHAUSER COMPANY

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NAD 83

425

430

S 62°50'27" W
1398.46'

MATCH LINE STA. 422+00 SEE SHEET 29

MATCH LINE STA. 436+00 SEE SHEET 31

-L- N 29° 51' 36.9" W

END WW FENCE

BEGIN WW FENCE

WOODS

HW

MEDIAN V DITCH SEE DETAIL N/A

CL B RIP RAP
EST. 8 TONS
EST. 21 SY GF

CL I RIP RAP
EST. 20 TONS
EST. 39 SY GF

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

CL B RIP RAP
EST. 1 TONS
EST. 5 SY GF

W67

50' 0' 50' 100' 150'
GRAPHIC SCALE

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

SEE SHEETS 64 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$SITENAME$$$$ $$$$DGN$$$$

11/15/2018
mgberry
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8/17/99

REVISIONS

7/13/2018 - PARCEL 2 - CHANGED PDE TO TCE STATION -L- 431+98 TO 432+98 RT
PARCEL 2 - CHANGED PDE TO TCE STATION -L- 432+68 TO 433+42 LT

PROJECT REFERENCE NO.	SHEET NO.
R-1015	30
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brock E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 115 OF 167

SITE 35A

WEYERHAUSER COMPANY

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NAD 83

S 62°50'47" W
1398.46'

425

430

-L- N 29° 51' 36.9" W

MATCH LINE STA. 422+00 SEE SHEET 29

MATCH LINE STA. 436+00 SEE SHEET 31

END WW FENCE

BEGIN WW FENCE

WOODS

MEDIAN V DITCH
SEE DETAIL NO.

CL B RIP RAP
EST. 8 TONS
EST. 21 SY GF

CL I RIP RAP
EST. 20 TONS
EST. 39 SY GF

EST. 15 TONS
EST. 30 SY GF

CL B RIP RAP
EST. 1 TONS
EST. 5 SY GF

W67

50' 0' 50' 100' 150'
GRAPHIC SCALE

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

SEE SHEETS 64 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$ DGN$$$$$$$$$$$$$$$$$$$$

11/15/2018
mgberry
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-1015	31
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brock E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 116 OF 167

SITE 35A

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

LENA EBRON

NAD 83

440

445

R. GRAHAM WILLIAMS, et ux
10

W67

MATCH LINE STA. 436+00 SEE SHEET 30

MATCH LINE STA. 450+00 SEE SHEET 32

MEDIAN V DITCH
SEE DETAIL NN

N 29°51'36.9"W

24" RCP
EQUALIZER PIPE

2CLD

FS
SEE DETAIL II

18" RCP
EQUALIZER PIPE

0.25

WOODS

BOLING FAMILY INVESTMENTS, L.L.C., et al
11

R. GRAHAM WILLIAMS, et ux
10

50' 0' 50' 100' 150'
GRAPHIC SCALE

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

LENA EBRON

F F — DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SEE SHEET 64 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/15/2018
mgberry
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$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	31
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING
SHEET 117 OF 167

REVISIONS 8/17/99

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

LENA EBRON

NAD 83

440

445

R. GRAHAM WILLIAMS, et ux
10
W67

SITE 35A

MATCH LINE STA. 436+00 SEE SHEET 30

MEDIAN V DITCH
SEE DETAIL NN

N 29°51'36.9" W

2CM-B

SEE DETAIL BB

SEE DETAIL AA

SEE DETAIL CC

SEE DETAIL DD

025

WOODS

MATCH LINE STA. 450+00 SEE SHEET 32

BOLING FAMILY INVESTMENTS, L.L.C., et al
11

R. GRAHAM WILLIAMS, et ux
10

50' 0' 50' 100' 150'
GRAPHIC SCALE

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

LENA EBRON

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SEE SHEET 64 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$FILENAME$$$$

11152018
mgberry
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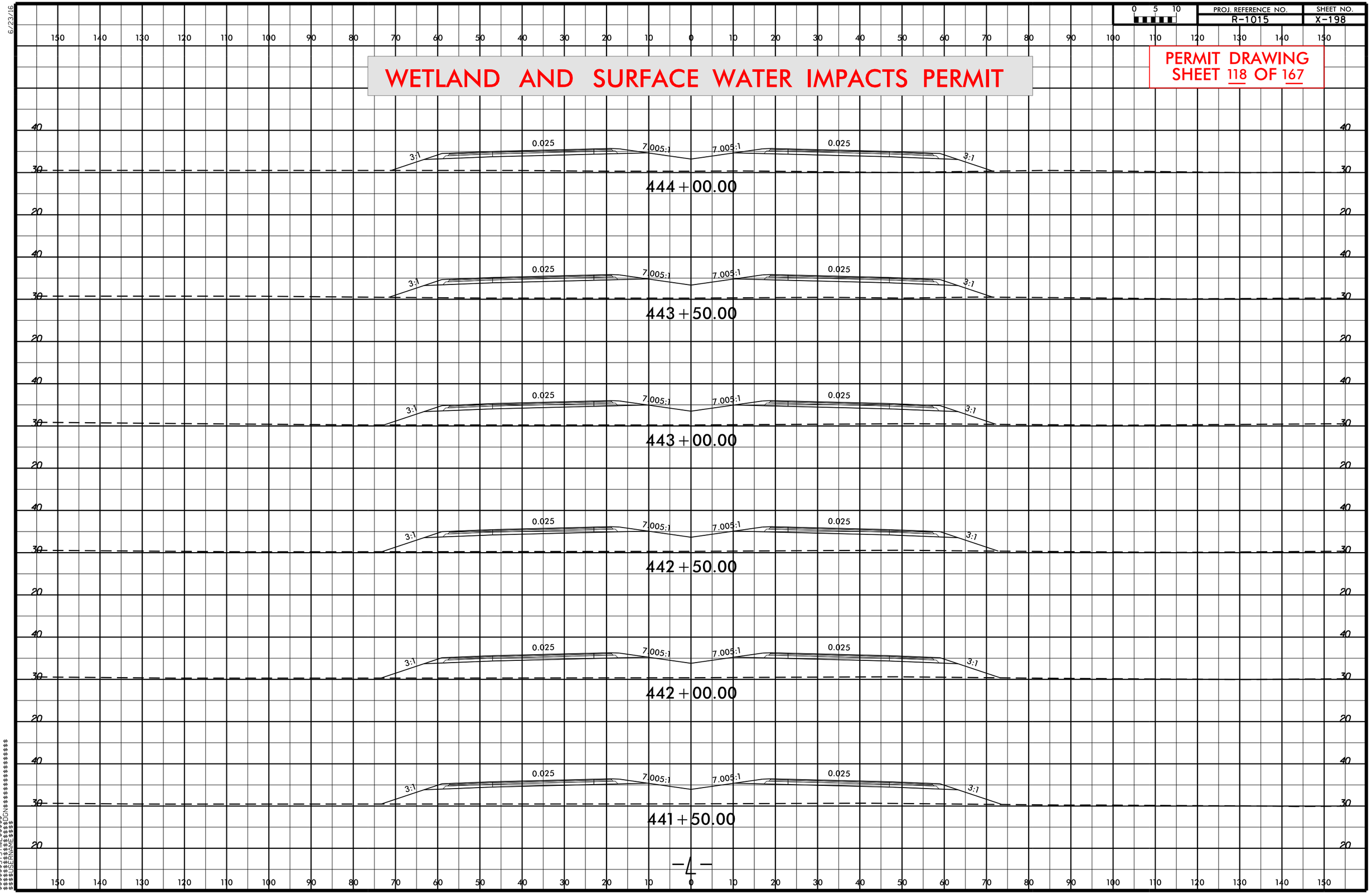
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-198

PERMIT DRAWING
SHEET 118 OF 167

WETLAND AND SURFACE WATER IMPACTS PERMIT



8/2/2018
mpberry
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$$$$$$$$USERLEVEL$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	32
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No. F-0105

PERMIT DRAWING
SHEET 119 OF 167

SITE 35B

SITE 36A

SITE 36B

NAD 83

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

R. GRAHAM WILLIAMS, et ux (10)

BOLING FAMILY INVESTMENTS, L.L.C., et al (11)

CLYDE O. BELANGIA, JR., et al (12)

(13)

455

460

REVISIONS

8/17/99

MATCH LINE STA. 450+00 SEE SHEET 31

MATCH LINE STA. 464+00 SEE SHEET 33

-L- TS Sta. 452+51.21

-L- SC Sta. 458+09.21

CHORD

N 29° 51' 36.9" W

END WW FENCE

BEGIN WW FENCE

HW SEE DETAIL SHEET 2D

RIP RAP

15" RCP-IV

18" RCP-IV

24" RCP-IV, FLARED 'L'

2GI

FS SEE DETAIL B

2GI-D SEE DETAIL B

CL B RIP RAP EST. 1 TONS EST. 5 SY GF

CL I RIP RAP EST. 26 TONS EST. 50 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL I RIP RAP EST. 57 TONS EST. 104 SY GF

MEDIAN 'V' DITCH SEE DETAIL NN

W67

W67

W67

W.L.B.

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEETS 65 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh32.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-1015	32
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 Fax
NC License No. F-0105

PERMIT DRAWING
SHEET 120 OF 167

8/17/99

REVISIONS

NAD 83

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

R. GRAHAM WILLIAMS, et ux

BOLING FAMILY INVESTMENTS, L.L.C., et al

CLYDE O. BELANGIA, JR., et al

10 11 12 13

455 460

SITE 35B

SITE 36A

SITE 36B

MATCH LINE STA. 450+00 SEE SHEET 31

MATCH LINE STA. 464+00 SEE SHEET 33

-L- TS Sta. 452+51.21

-L- SC Sta. 458+09.21

CHORD

N 29° 51' 36.9" W

END WW FENCE

BEGIN WW / FENCE

HW HORIZONTAL DETAIL SHEET 2K

18" RCP-IV BURIED

15" RCP-IV

2GI

FS SEE DETAIL B

2GI-D SEE DETAIL B

CL B RIP RAP EST. 1 TONS EST. 6 SY GF

CL I RIP RAP EST. 26 TONS EST. 50 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL I RIP RAP EST. 37 TONS EST. 104 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

MEDIAN 'V' DITCH SEE DETAIL NN

W67

W67

W67

BOLING FAMILY INVESTMENTS, L.L.C., et al

11

CLYDE O. BELANGIA, JR., et al

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEETS 65 FOR PROFILE -L-

SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh32.dgn

$$$$SYSTIME$$$$ $$$$USERNAME$$$$ $$$$DGN$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-202

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 121 OF 167

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

40 30 20

3:1 0.058 6:1 6:1 0.058 3:1
29.87
456+00.00

3:1 0.048 6:1 6:1 0.048 3:1
29.73
455+50.00

3:1 0.038 6:1 6:1 0.038 3:1
29.65
455+00.00

3:1 0.028 6:1 6:1 0.028 3:1
29.63
454+50.00

WLB

3:1 0.018 6:1 6:1 0.025 3:1
29.71
454+00.00

3:1 0.008 6:1 6:1 0.025 3:1
453+50.00

PROPOSED UNDERCUT

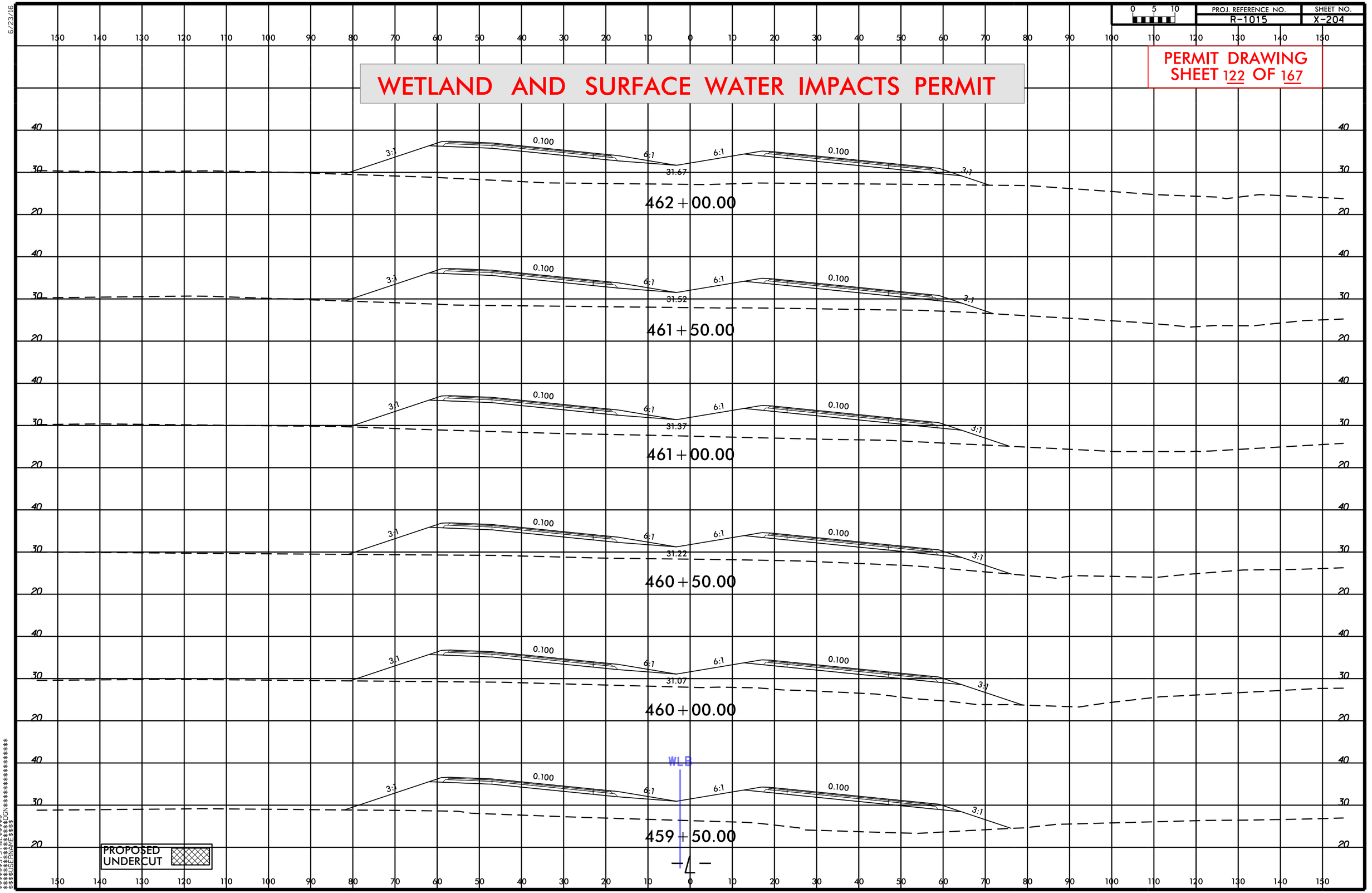
-4-

8/2/2018
mgilerry
R:\Hydraulics\PERMITS_Environmental\Drawings\XPL\R1015_Hyd_XPL_358.dgn
$$$$$$$$SYSTIME$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-204

PERMIT DRAWING
SHEET 122 OF 167

WETLAND AND SURFACE WATER IMPACTS PERMIT



8/2/2018
mgberry
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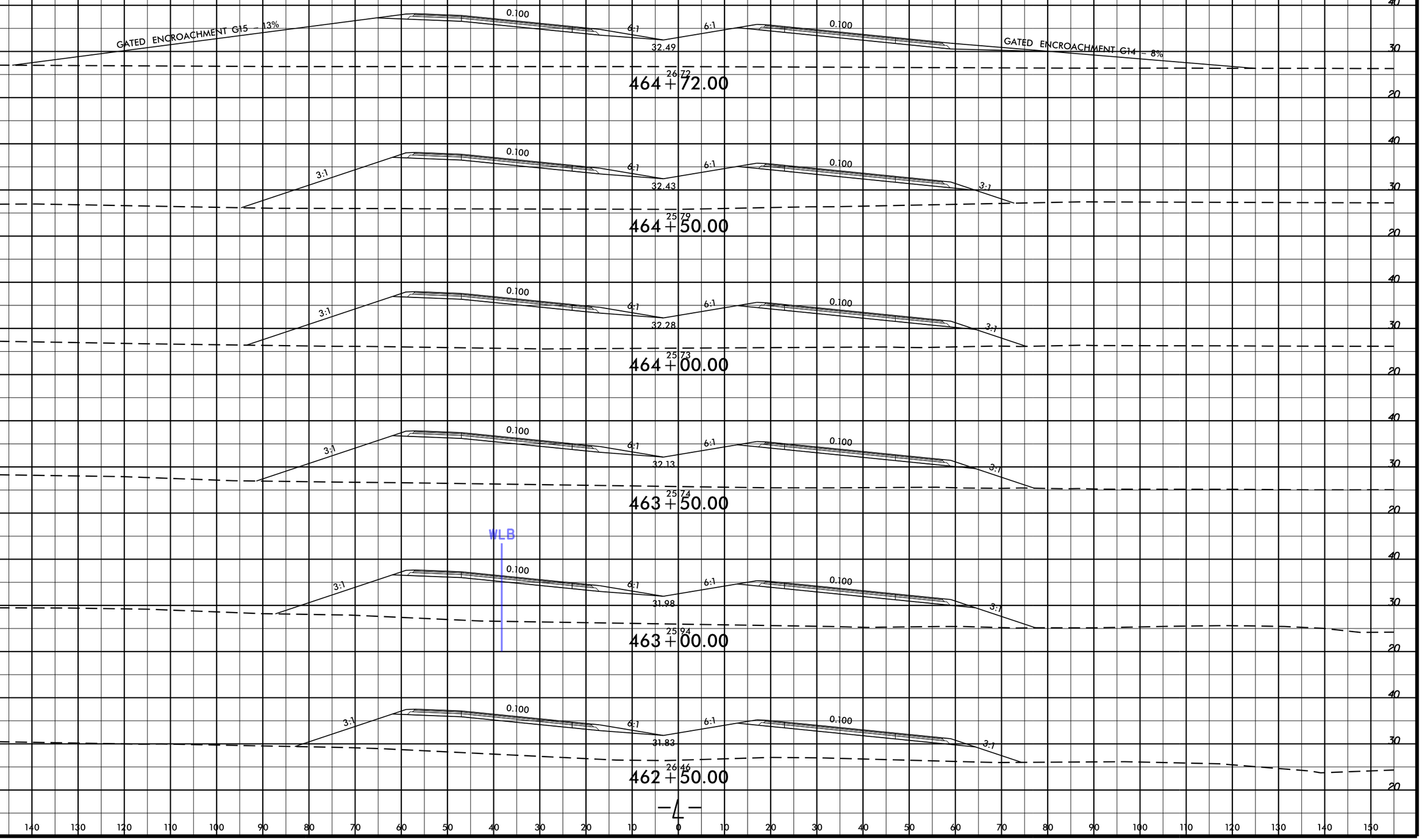
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-205

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 123 OF 167



8/2018
mgberry
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$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	33
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
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919 781-4626 VOICE 919 781-4869 FAX
NC License No. F-0105

PERMIT DRAWING
SHEET 124 OF 167

8/17/99

REVISIONS

7/13/2018 - PARCEL 13 - ADDED TCE STATION -L- 464+35 TO 465+15 RT
PARCEL 13 - ADDED TCE STATION -L- 464+25 TO 465+22 LT

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

SITE 36B (13)

SITE 37

NAD 83

Q10 = 2.9cfs
V10 = 1.3fps

W69

EXCAVATION
Q10 = 6.0cfs
V10 = 1.4fps

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S = 0.00273ft/ft
DDE = 14 c.y.

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S = 0.0017ft/ft
DDE = 14 c.y.

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S = 0.0012ft/ft
DDE = 45 c.y.

TIE TO EXIST. DITCH

SPECIAL LATERAL 'V' DITCH
SEE DETAIL R

TOE PROTECTION
CLASS B RIP RAP
EST. = 76 TONS
EST. = 140 SY GT
SEE DETAIL J

2GI

SEE DETAIL B

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL I RIP RAP
EST. 10 TONS
EST. 23 SY GF

TOE PROTECTION
CLASS B RIP RAP
EST. = 43 TONS
GT EST. = 115 SY
SEE DETAIL J

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S = 0.0028ft/ft
DDE = 16 c.y.

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S = 0.0016ft/ft
DDE = 23 c.y.

MATCH LINE STA. 464+00 SEE SHEET 32

MATCH LINE STA. 478+00 SEE SHEET 34

-L- CS Sta. 473+67.19

FILL IN WETLANDS

HW

-L-

465

470

475

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

50' 0' 50' 100' 150'
GRAPHIC SCALE

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

SEE SHEET 65 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh33.dgn

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	33
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T R REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E Anderson

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919 781-4626 VOICE
919 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 125 OF 167

REVISIONS

8/17/99 -

7/13/2018 - PARCEL 13 - ADDED TCE STATION -L- 464+35 TO 465+15 RT
PARCEL 13 - ADDED TCE STATION -L- 464+25 TO 465+22 LT

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NAD 83

SITE 36B (13)

SITE 37

Q10 = 2.9cfs
V10 = 1.3fps

EXCAVATION
Q10 = 6.0cfs
V10 = 1.4fps

W69

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S = 0.0017ft/ft
DDE=14 c.y.

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S = 0.0027ft/ft
DDE=14/ c.y.

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S = 0.0012ft/ft
DDE=45 c.y.

TIE TO EXIST. DITCH

HW

SPECIAL LATERAL 'V' DITCH
SEE DETAIL R

TOE PROTECTION
CLASS B RIP RAP
EST. = 76 TONS
EST. = 140 SY GF
SEE DETAIL J

SEE DETAIL B

2GI

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL I RIP RAP
EST. 10 TONS
EST. 23 SY GF

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

TOE PROTECTION
CLASS B RIP RAP
EST. = 43 TONS
GT EST. = 115 SY
SEE DETAIL J

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S = 0.0028ft/ft
DDE=16 c.y.

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S = 0.0076ft/ft
DDE= 23 c.y.

-L- CS Sta. 473+67.19

FILL IN WETLANDS

MATCH LINE STA. 464+00 SEE SHEET 32

MATCH LINE STA. 478+00 SEE SHEET 34

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

50' 0' 50' 100' 150'
GRAPHIC SCALE

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

SEE SHEET 65 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh33.dgn

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$ENGINEER$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	34
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER — T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER — Brook E. Anderson

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NC License No.: F-0105

PERMIT DRAWING SHEET 126 OF 167

REVISIONS

8/17/99

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

2

NAD 83

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

13

480 485 490

SITE 37

W69

SITE 38A

TIE PROP. DITCH TO NATURAL GROUND

Q10 = 1.6cfs
V10 = 1.1fps

EXCAVATION

HW

-BL-574

-BL-575

-BL-576

-L- N 31° 42' 45.4" E

2GI

FS SEE DETAIL A

FS SEE DETAIL B

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL I RIP RAP EST. 10 TONS EST. 23 SY GF

MATCH LINE STA. 478+00 SEE SHEET 33

MATCH LINE STA. 492+00 SEE SHEET 35

-L- ST Sta. 479+25.19

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

2

50' 0' 50' 100' 150'

GRAPHIC SCALE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

SEE SHEETS 66 FOR PROFILE -L-

SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$ $$$$DGN$$$$ $$$$USERNAME$$$$

11/15/2018
mgberry
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	34
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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NC License No.: F-0105

PERMIT DRAWING SHEET 127 OF 167

REVISIONS

8/17/99

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

2

NAD 83

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

13

480

485

490

SITE 37

W69

SITE 38A

TIE PROP. DITCH TO NATURAL GROUND

Q10 = 1.6cfs
V10 = 1.1fps

EXCAVATION

MATCH LINE STA. 478+00 SEE SHEET 33

MATCH LINE STA. 492+00 SEE SHEET 35

-L- ST Sta. 479+25.19

-BL-574

-BL-575

-BL-576

-L- N 31° 42' 45.4" E

HW

36" RCP CL IV

2GI

FS SEE DETAIL B

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL I RIP RAP
EST. 10 TONS
EST. 23 SY GF

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

2

50' 0' 50' 100' 150'

GRAPHIC SCALE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

SEE SHEETS 66 FOR PROFILE -L-

SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$CELLNAME$$$$

11/15/2018
mgberry
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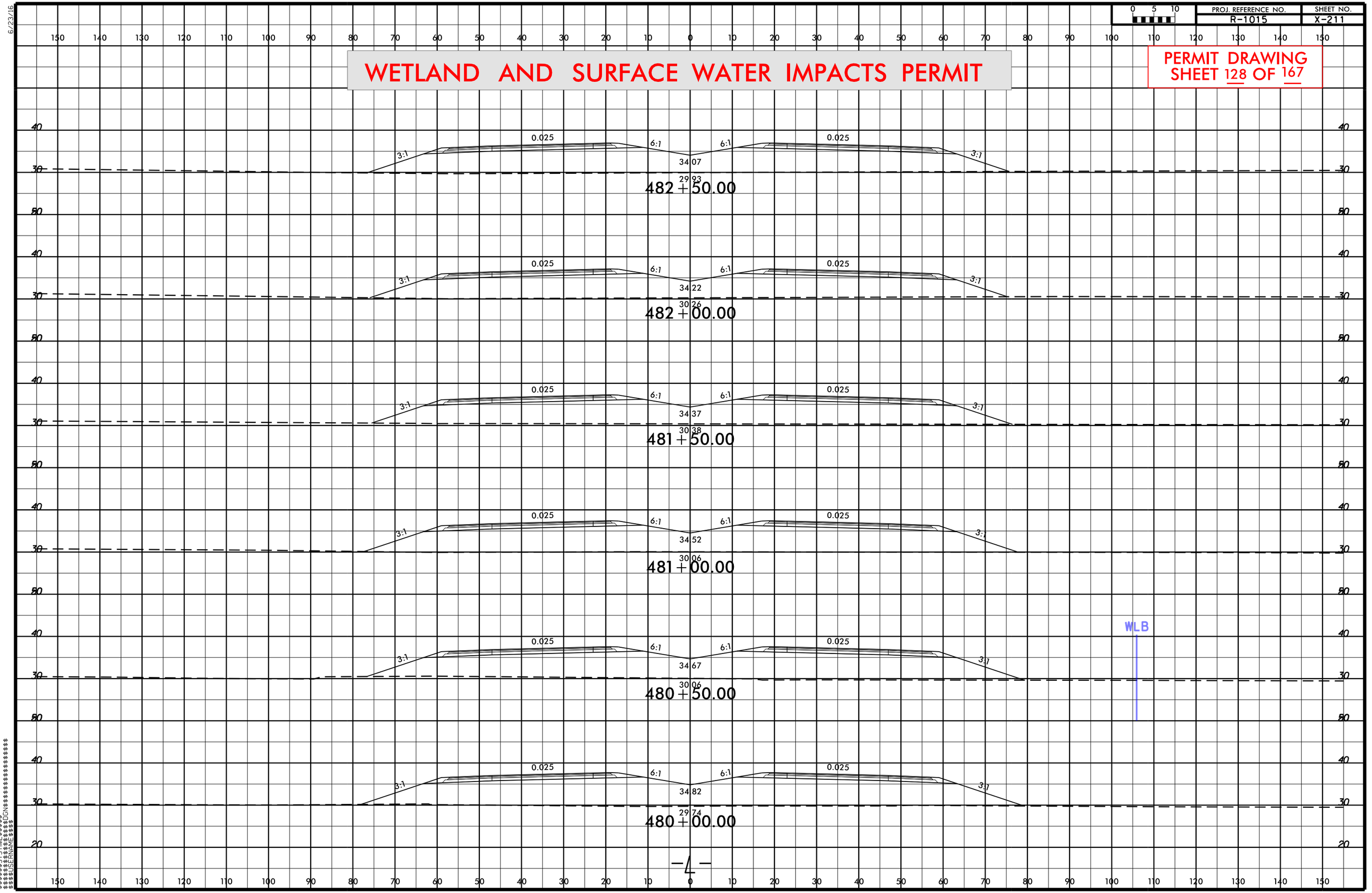
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-211

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 128 OF 167



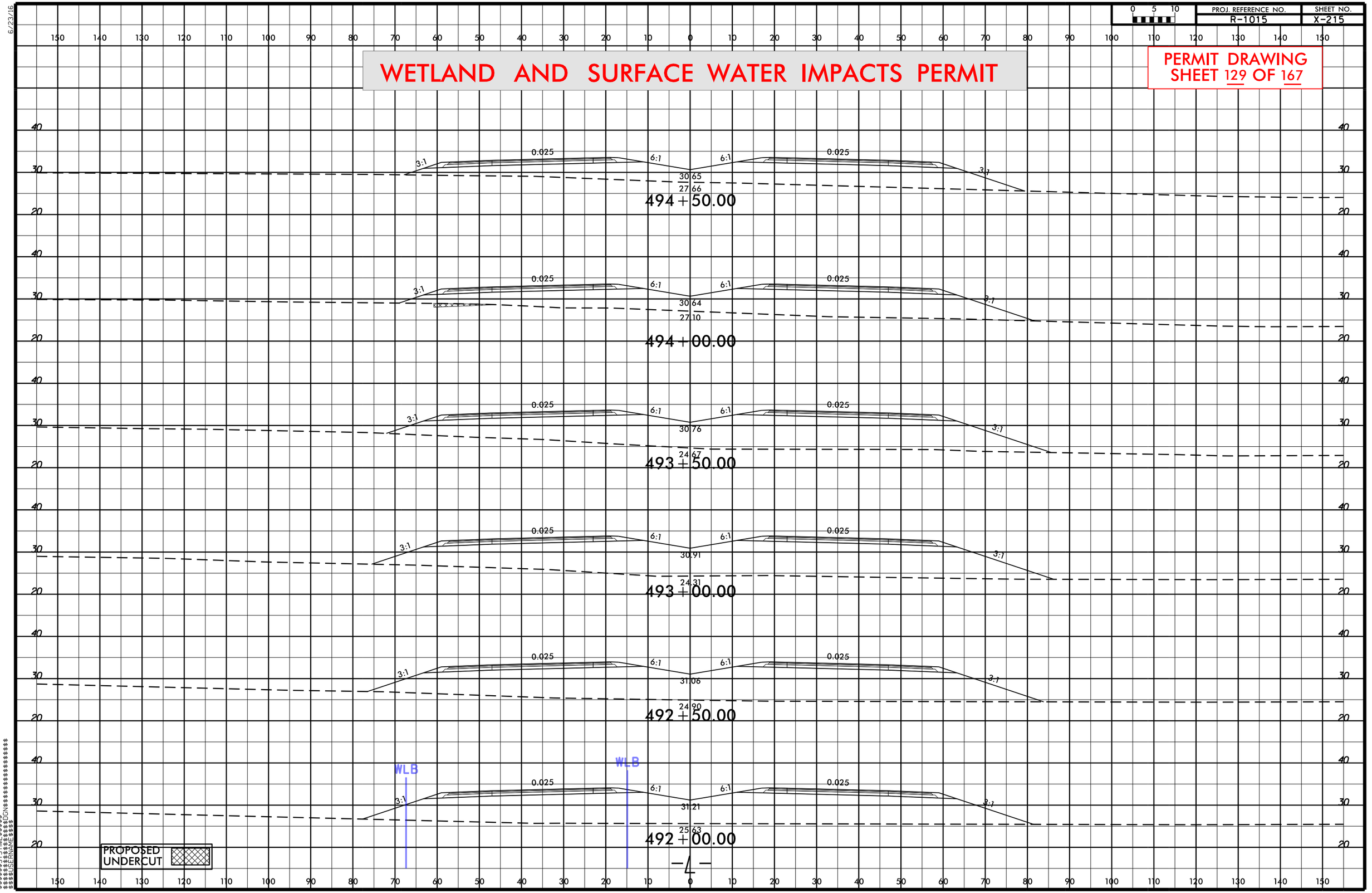
9/2/2018
mbowden
R:\HydroBcs\PERMITS_Environmental\Drawings\XPL\R1015_Hyd_XPL_37.dgn
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-215

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 129 OF 167



$$$$$$$$$SYSTIME$$$$$
$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	35
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brook E. Anderson

moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 130 OF 167

REVISIONS
7/13/2018 - PARCEL 2 - CHANGED TCE TO PUE AND REVISED AREA STATION -L- 495+14 TO 496+10 RT
8/17/99

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NAD 83

SITE 38A

SITE 38B

MATCH LINE STA. 492+00 SEE SHEET 34

MATCH LINE STA. 505+00 SEE SHEET 36

495

500

CP & L RIGHT OF WAY

-L-

N 31° 42' 45.4" E

S 58° 17' 14.6" E

N 64° 33' 25.8" E

N 34° 00' 45.4" E

RR -EY3- POT Sta. 16+92.14

S 25° 24' 49.7" E

Mech. Clearing

W70

W70

15" RCP-III

18" RCP-IV

15" RCP-IV

2GI

F5 SEE DETAIL B

TB 2GI

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL I RIP RAP EST. 10 TONS EST. 23 SY GF

CL I RIP RAP EST. 13 TONS EST. 30 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

15" CAAP W/ELBOWS

PUE

RW

CA

50' 0' 50' 100' 150'
GRAPHIC SCALE

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

SEE SHEET 66 FOR PROFILE -L-
SEE SHEET 85 FOR PROFILE -RP2C-
SEE SHEET 91 FOR PROFILE -GI2-
SEE SHEET 2B-9 SKETCH 5 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh35.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-1015	35
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T R REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 131 OF 167

REVISIONS
8/17/99
7/13/2018 - PARCEL 2 - CHANGED TCE TO PUE AND REVISED AREA STATION -L- 495+14 TO 496+10 RT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NAD 83

SITE 38A

SITE 38B

MATCH LINE STA. 492+00 SEE SHEET 34

MATCH LINE STA. 505+00 SEE SHEET 36

495

500

CP & L RIGHT OF WAY

-L-

N 31° 42' 45.4" E

S 58° 17' 14.6" E

N 34° 00' 45.4" E

N 55° 35' 25.5" W

S 25° 24' 49.7" E

RR -EY3- POT Sta. 16+92.14

Mech. Clearing

W70

W70

PUE

15" RCP-III

18" RCP-IV

2GI

FS SEE DETAIL B

TB 2GI

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL I RIP RAP EST. 10 TONS EST. 23 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

18" CAAP W/ELBOWS

50' 0' 50' 100' 150'
GRAPHIC SCALE

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

SEE SHEET 66 FOR PROFILE -L-
SEE SHEET 85 FOR PROFILE -RP2C-
SEE SHEET 91 FOR PROFILE -GI2-
SEE SHEET 2B-9 SKETCH 5 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

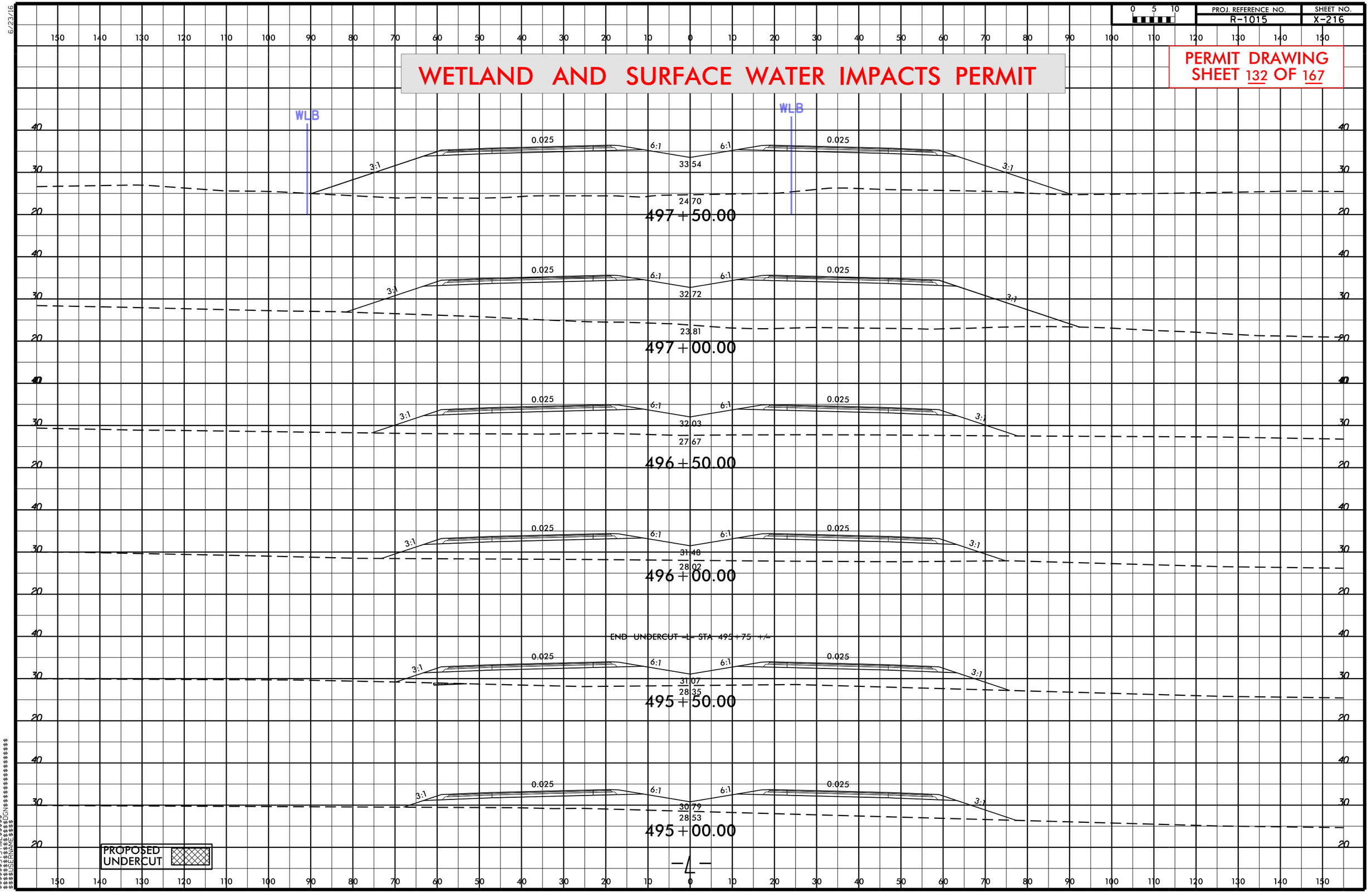
$$$$SYSTIME$$$$
$$$$DGNS$$$$
$$$$USERNAME$$$$

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh35.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-216

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 132 OF 167



8/2/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\XPL\R1015_Hyd_XPL_388.dgn
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$

REVISIONS

7/1/2018
PROJECT 1 - ADD 4 PIPES, REVISED
PROJECT 2 - ADDED TIE STATION -L- 2+00.00, 30.00' RT
PROJECT 3 - ADDED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 4 - ADDED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 5 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 6 & 7 - REVISED POIL STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 8 - ADDED POIL STATION -RPA2D- 2+00.00, 10+00.00 RT
PROJECT 9 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 10 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 11 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 12 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 13 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 14 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 15 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 16 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 17 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 18 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 19 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 20 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 21 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 22 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 23 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 24 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 25 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 26 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 27 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 28 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 29 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 30 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 31 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 32 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 33 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 34 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 35 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 36 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 37 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 38 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 39 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 40 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 41 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 42 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 43 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 44 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 45 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 46 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 47 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 48 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 49 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 50 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 51 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 52 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 53 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 54 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 55 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 56 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 57 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 58 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 59 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 60 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 61 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 62 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 63 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 64 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 65 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 66 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 67 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 68 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 69 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 70 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 71 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 72 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 73 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 74 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 75 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 76 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 77 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 78 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 79 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 80 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 81 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 82 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 83 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 84 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 85 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 86 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 87 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 88 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 89 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 90 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 91 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 92 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 93 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 94 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 95 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 96 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 97 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 98 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 99 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT
PROJECT 100 - REVISED TIE STATION -RPA2C- 2+00.00, 21+15 RT

PROJECT REFERENCE NO. R-1015 | SHEET NO. 35
RW SHEET NO.

ROADWAY DESIGN ENGINEER
SEAL 015869
ENGINEER

HYDRAULICS ENGINEER
SEAL 032581
ENGINEER

PERMIT DRAWING
SHEET 33 OF 167

SITE 40

SITE 39

SITE 46

SEE ENLARGEMENT

MATCH LINE STA. 505+00 SEE SHEET 35

MATCH LINE -RP2AC STA. 45+00 SEE SHEET 48

MATCH LINE -RP2A STA. 66+80 SEE SHEET 37

MATCH LINE STA. 533+50 SEE SHEET 37

Q10=49CFS
V10=3.0FPS

Q10=19CFS
V10=3.8FPS

Q10=34CFS
V10=1.7FPS

Q10=34CFS
V10=2.73FPS

Q10=34CFS
V10=3.95FPS

W74 W76 S22 W75 S21 S23 W77 W83

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

SEE SHEETS 65,67 AND 68 FOR PROFILE -L-
SEE SHEETS 85 FOR PROFILE -RP2C-
SEE SHEETS 87 AND 88 FOR PROFILE -RP2AC-
SEE SHEETS 90 FOR PROFILE -LP2A-
SEE SHEETS 84 FOR PROFILE -RP2A-
SEE SHEETS 89 FOR PROFILE -RP2CD-
SEE SHEETS 92 FOR PROFILE -SEWRD-
SEE SHEET 2B-9 SKETCHES 8 & 9 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

LOCATION: US 70 (HAVELOCK BYPASS) FROM SOUTH OF CARTERET-CRAVEN COUNTY LINE TO SOUTH OF SR 1176 (CAROLINA PINES BLVD)

TIP NO. R-1015 | COUNTY: CRAVEN

DESIGNED BY: DGH

CHECKED BY: TRR | DATE: 6/18/2018

GRAPHIC SCALE 50 25 0 50 100 PLANS

11/6/2018
mgberry
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REVISIONS

PROJECT 1 - ADD THREE SHARROWS
PROJECT 2 - ADDED TIE STATION -L- 2+00 RT
PROJECT 3 - ADDED TIE STATION -RPBC- 2+15 RT
PROJECT 4 - REVISED TIE STATION -RPBC- 1+50 RT
PROJECT 5 - REVISED TIE STATION -RPBC- 1+50 RT
PROJECT 6 & 7 - REVISED TIE STATION -RPBC- 1+50 RT
PROJECT 8 - ADDED POI: STATION -RPBC2- 2+15 RT OFFSET: 35784 FT
PROJECT 9 - REVISED TIE STATION -RPBC- 1+50 RT
PROJECT 10 - REVISED TIE STATION -RPBC- 1+50 RT
PROJECT 11 - REVISED TIE STATION -RPBC- 1+50 RT
-RPBC- STATION 37+05.10 TO 37+52.91
PROJECT 12 - REVISED TIE STATION -RPBC- 1+50 RT
PARCELS 15,21,21B - REVISED PI#/PIPELINE STATION -RPBC2- 18+80 TO

GRAPHIC SCALE 200' 0' 200' 400' 600'

PROJECT REFERENCE NO. R-1015 | SHEET NO. 36
RW SHEET NO.

ROADWAY DESIGN ENGINEER — SEAL 015869 — ENGINEER
HYDRAULICS ENGINEER — SEAL 032581 — ENGINEER

PERMIT DRAWING SHEET 134 OF 167

SITE 40

SITE 39

SITE 46

SEE ENLARGEMENT

MATCH LINE STA. 505+00 SEE SHEET 35

MATCH LINE -RP2AC STA. 56+00 SEE SHEET 48

MATCH LINE -RP2A STA. 66+80 SEE SHEET 37

MATCH LINE STA. 533+50 SEE SHEET 37

W74 W76 W77 W83 S22

Q10=34CFS V10=1.7FPS

Q10=34CFS V10=2.73FPS

Q10=34CFS V10=3.95FPS

Q10=49CFS V10=3.0FPS

Q10=19CFS V10=3.8FPS

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

SEE SHEETS 66,67 AND 68 FOR PROFILE -L-
SEE SHEETS 85 FOR PROFILE -RP2C-
SEE SHEETS 87 AND 88 FOR PROFILE -RP2AC-
SEE SHEETS 90 FOR PROFILE -LP2A-
SEE SHEETS 84 FOR PROFILE -RP2A-
SEE SHEETS 89 FOR PROFILE -RP2CO-
SEE SHEETS 92 FOR PROFILE -SERVAR-
SEE SHEET 20-A SKETCHES 8 & 9 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 20-I THRU 20-Z FOR DRAINAGE DITCH DETAILS

LOCATION: US 70 (HAVELOCK BYPASS) FROM SOUTH OF CARTERET/CRAVEN COUNTY LINE TO SOUTH OF SR 1174 (CAROLINA PINES BLVD).

TIP NO: R-1015 COUNTY: CRAVEN

DESIGNED BY: DGH

CHECKED BY: TRH DATE: 6/18/2018

GRAPHIC SCALE 50 25 0 50 100 PLANS

11/6/2018
mgberry
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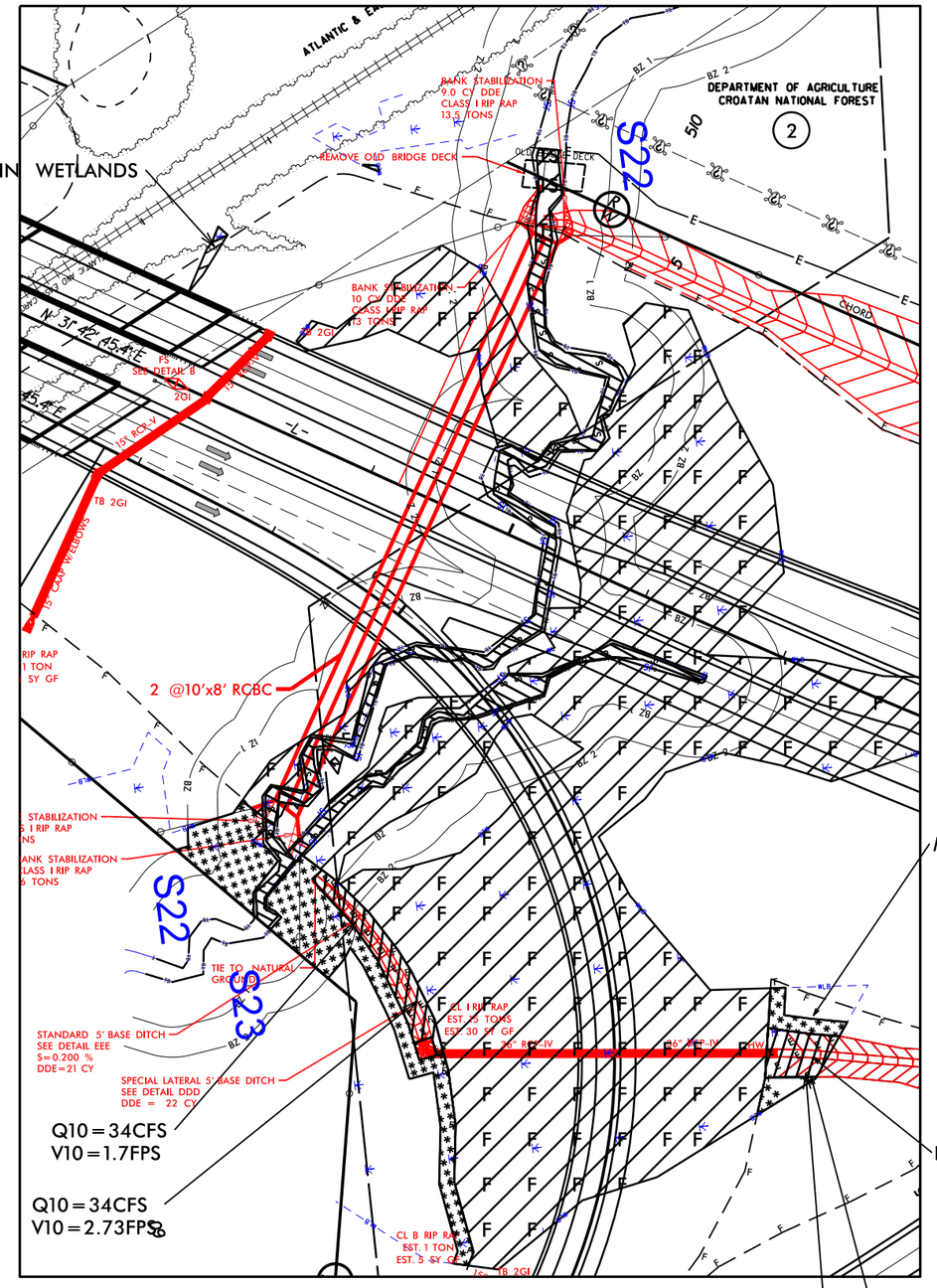
ENLARGEMENT SITE 39



DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

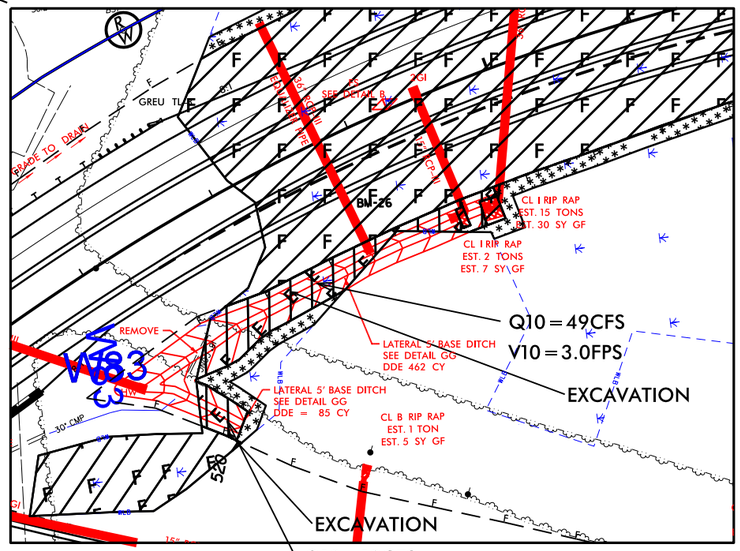
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

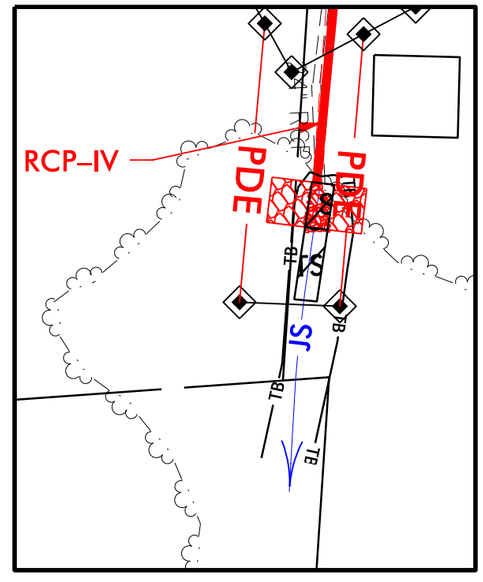
ENLARGEMENT SITE 40

NAD 83



50' 0' 50' 100' 150'
GRAPHIC SCALE

3X ENLARGEMENT SITE 46



PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PERMIT DRAWING
SHEET 135 OF 167

8/17/99
REVISIONS

11/16/2018
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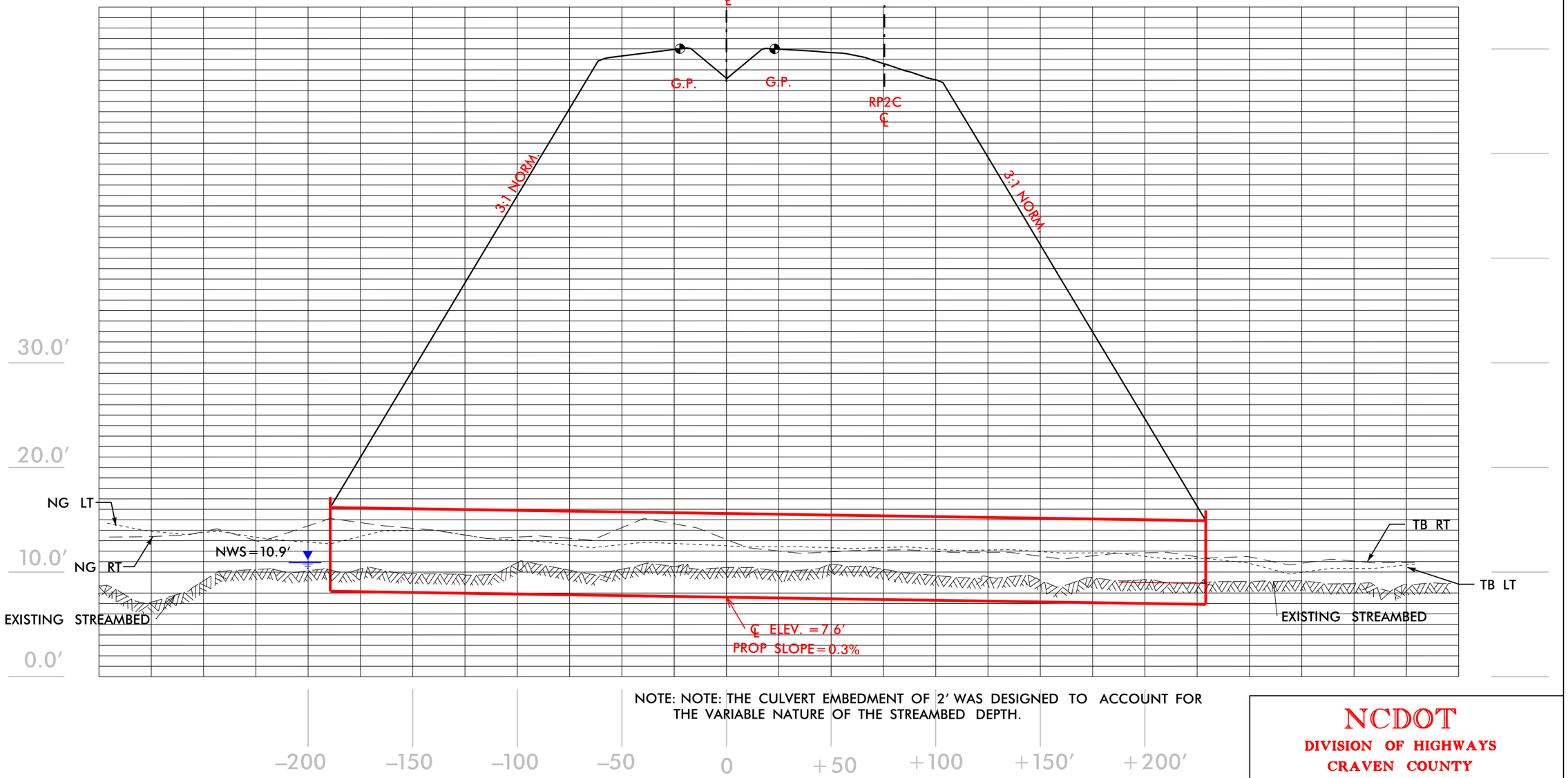
$$$$$$$SYSTIME$$$$$$
$$$$$$$USERNAME$$$$$$
$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

STA 509+41 –L–
PROPOSED 2@10'X8' RCBC
EMBEDDED 2' BELOW STREAMBED
GRADE POINT=60.01'
SKEW=90°



NOTE: NOTE: THE CULVERT EMBEDMENT OF 2' WAS DESIGNED TO ACCOUNT FOR THE VARIABLE NATURE OF THE STREAMBED DEPTH.

PROFILE
SITE 39

NCDOT
DIVISION OF HIGHWAYS
CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)
US 70 (HAVELOCK BYP)
FROM SOUTH OF CARTERET
/CRAVEN COUNTY LINE
TO SOUTH OF SR 1176

SHEET 136 OF 167 08/01/2018

8/1/2018
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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-226

290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 137 OF 167

70 60 50 40 30 20 10

59.76
0.027
6:1
6:1
58.03
3:1
3:1
3:1
14.94

512 + 00.00

0.025
6:1
6:1
58.02
WLB
3:1
3:1
3:1
14.26

511 + 50.00

PROPOSED UNDERCUT

-4-

8/2/2018
mgberry
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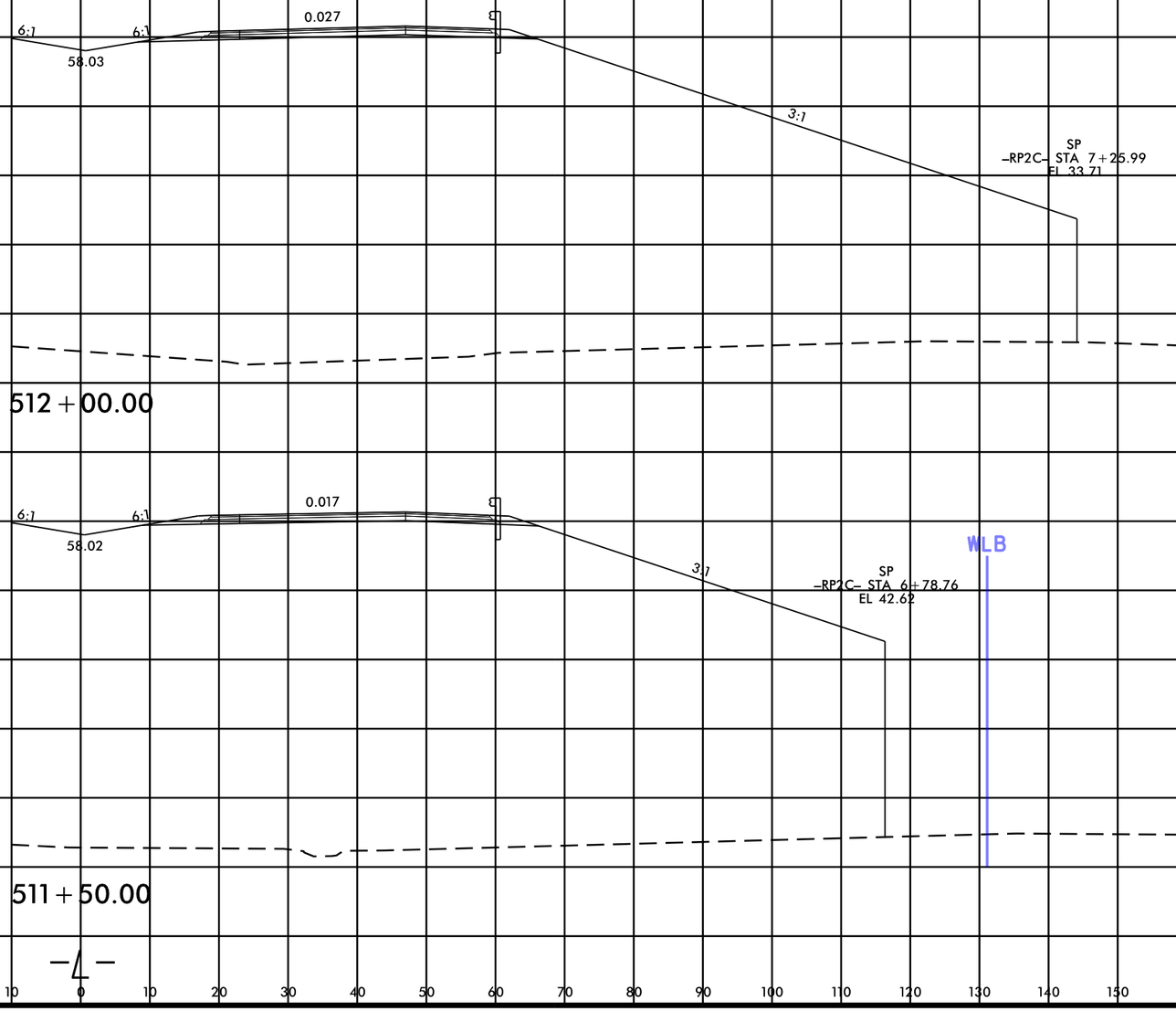
$$$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-255

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 138 OF 167



8/2/2018
mgberry
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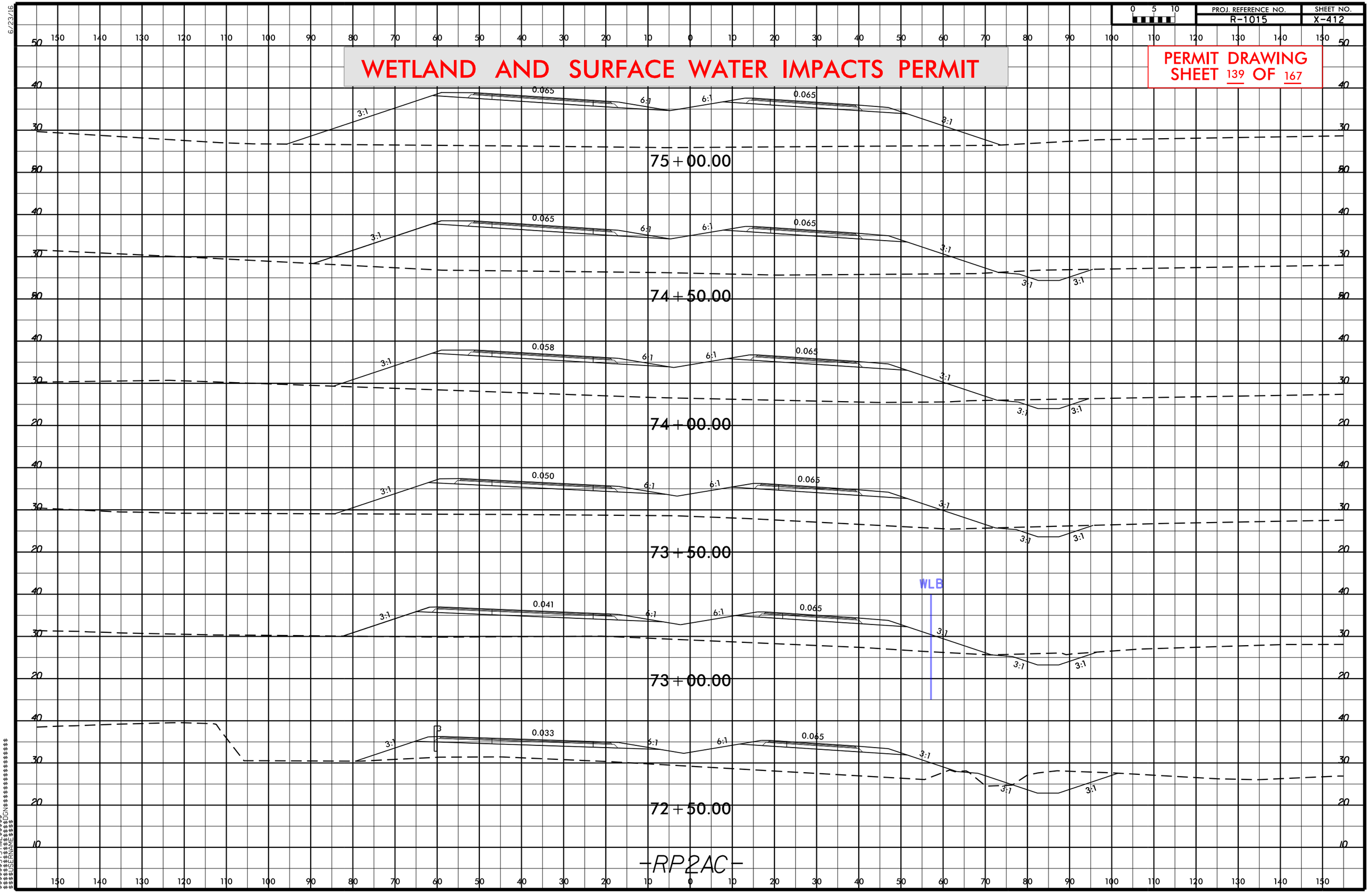
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-412

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 139 OF 167



8/2/2018
mcollins
R:\Hydraulics\PERMITS_Environmental\Drawings\XPL\R1015_Hyd_XPL_40.dgn
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$USERNAME$$$$

8/17/99

REVISIONS

7/13/2018 - PARCEL 26 - REVISED TIE STATION -RP2A- 37+10 TO 37+55 LT
REVISIONS
10/29/2018 - PARCELS 21,24,28,28Z,29 & 31 - ADDED PUE STATION -SERVRD- 37+45 TO 50+90 RT
PARCEL S 29.30 ELIMINATED PARCEL 30 COMBINED WITH PARCEL 29
PARCEL S 29.30 PARCEL PROPERTY OWNER INFORMATION
PARCELS 31,32,33 ELIMINATED PARCELS 32 AND 33 COMBINED WITH PARCEL 31
PARCEL 31 - UPDATED PROPERTY OWNER INFORMATION
PARCELS 21,24,28,28Z,29,31 - ADDED PUE STATION -SERVRD- 37+45 TO 50+90 RT
-ADDED AUE TO -SERVRD- STATION 41+04 TO 42+75 RT

PROJECT REFERENCE NO.	SHEET NO.
R-1015	37
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol — 4700 FALLS OF NEUSE ROAD, SUITE 300, RALEIGH, NORTH CAROLINA 27609, 919 781-4626 VOICE, 919 781-4869 FAX, NC License No.: F-0105

PERMIT DRAWING SHEET 140 OF 167

NAD 83

SITE 40

MATCH LINE -RP2A STA. 86+80 SEE SHEET 36

MATCH LINE STA. 533+50 SEE SHEET 36

MATCH LINE STA. 547+00 SEE SHEET 38

ROYCE B. DAW (23) — BILLY ROBERT BRIDGEWATER (25) — (26) — WALTER J. KINCAID (27) — DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST (2)

NEIL BAKER (22) — ELLIS B. SALTER (21) — THOMAS AVON GRIFFIN — LAURIE RENNIE WYNNE DICKERSON (28, 28Z) — WILLIAM D. WYNNE, et ux (29) — JEFFREY A. WYNNE (31)

-RP2A- SRS Sta. 88+13.39

-RP2A- SC Sta. 90+60.39

-RP2A- CS Sta. 95+46.75

-RP2A- ST Sta. 97+93.75 = -L- ST Sta. 543+98.84 (38° RT)

-L- PC Sta. 535+00.00

-L- PT Sta. 538+49.87

-L- N 6°17'26.6" E

-BL-594

-BY4-506

-SERVRD- N 6°47'56.3" E

-SERVRD- PC Sta. 40+29.30

-SERVRD- PT Sta. 42+27.23

MECH. CLEARING

Q10 = 5.3cfs
V10 = 3.8fps

FILL EXISTING DITCH AND GRADE TO DRAIN

SELL B RIP RAP EST. 3 TONS EST. 10 SY GF

EXCAVATION

REMOVE SYSTEM

REMOVE 12" CONC

MEDIAN 'V' DITCH SEE DETAIL NN

SPECIAL LATERAL 'V' DITCH SEE DETAIL S

SPECIAL LATERAL 'V' DITCH SEE DETAIL R

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL SS

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL QQ

PROPOSED WW FENCE ALONG EXIST R/W

TDE

PUE

AUE

TB 2GI

15" RCP-III

15" RCP-IV

24" RCP-IV

30" RCP-III

DENOTES MECHANIZED CLEARING

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

GRAPHIC SCALE 50' 0' 50' 100' 150'

SEE SHEET 68 FOR PROFILE -L-
SEE SHEET 84 FOR PROFILE -RP2A-
SEE SHEET 92 AND 93 FOR PROFILE -SERVRD-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$
11/16/2018
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8/17/99

REVISIONS

7/13/2018 - PARCEL 26 - "REVISED TIE - STATION "-RP2A-" 9+90 TO 9+95 LT
10/29/2018 - PARCELS 21,24,28,28Z,29 & 31 - ADDED POE STATION
PARCEL 30 - MODIFIED ELIMINATED PARCEL 30 COMBINED WITH PARCEL 29
PARCELS 29, 30 COMBINED WITH PARCEL 29
PARCEL 28 - UPDATED PROPERTY OWNER INFORMATION
PARCELS 31, 32, 33 & 34 ELIMINATED, PARCELS 32 AND 33 COMBINED WITH PARCEL 31
PARCEL 31 - UPDATED PROPERTY OWNER INFORMATION
PARCELS 21,24,28,28Z,29,31 - ADDED POE STATION -SERVRD- 37+45 TO 50+90 RT
PARCEL 40 - ADDED AUE TO -SERVRD- STATION 41+04 TO 42+75 RT

PROJECT REFERENCE NO.	SHEET NO.
R-1015	37
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

moffatt & nichol — 4700 FALLS OF NEUSE ROAD, SUITE 300, RALEIGH, NORTH CAROLINA 27609, 919 781-4626 VOICE, 919 781-4869 FAX, NC License No. F-0105

PERMIT DRAWING SHEET 141 OF 167

NAD 83

SITE 40

MATCH LINE -RP2A STA. 86+80 SEE SHEET 36

MATCH LINE STA. 533+50 SEE SHEET 36

MATCH LINE STA. 547+00 SEE SHEET 38

ROYCE B. DAW

BILLY ROBERT BRIDGEWATER

WALTER J. KINCAID

DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST

NEIL BAKER

ELLIS B. SALTER

THOMAS AVON GRIFFIN

LAURIE RENNIE WYNNE DICKERSON

WILLIAM D. WYNNE, et ux

JEFFREY A. WYNNE

-RP2A- SRS Sta. 88+13.39

-RP2A- SC Sta. 90+60.39

-RP2A- CS Sta. 95+46.75

-RP2A- ST Sta. 97+93.75 = -L- ST Sta. 543+98.84 (38' RT)

-L- PC Sta. 535+00.00

-L- PT Sta. 538+49.87

-SERVRD- PC Sta. 40+29.30

-SERVRD- PT Sta. 42+27.23

MECH. CLEARING

Q10 = 5.3cfs
V10 = 3.8fps

EXCAVATION

FILL EXISTING DITCH AND GRADE TO DRAIN

SELL B RIP RAP EST. 3 TONS EST. 10 SY GF

SPECIAL LATERAL 'V' DITCH SEE DETAIL S

SPECIAL LATERAL 'V' DITCH SEE DETAIL R

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL SS

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL QQ

MEDIAN 'V' DITCH SEE DETAIL NN

PROPOSED WW FENCE ALONG EXIST R/W

REMOVE SYSTEM

REMOVE

-BL-594

-BY4-506

N 4°16'19.3" E

N 6°17'26.6" E

N 4°24'56.8" E

N 6°47'56.3" E

50' 0' 50' 100' 150'
GRAPHIC SCALE

DENOTES MECHANIZED CLEARING

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

SEE SHEET 68 FOR PROFILE -L-
SEE SHEET 84 FOR PROFILE -RP2A-
SEE SHEET 92 AND 93 FOR PROFILE -SERVRD-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
11/16/2018
mgberry
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	39
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 142 OF 165

8/17/99

REVISIONS

7/13/2018 - PARCEL 39 - REVISED TCE STATION -L- 563+14 TO 563+64 RT
PARCEL 38 - ADDED TCE STATION -L- 561+00 TO 561+76 LT

-L- CS Sta. 561+19.69

-SERVEXT- PT Sta. 21+13.97

-SERVEXT- POT Sta. 21+64.81

-L- ST Sta. 562+67.69

-L- PC Sta. 573+26.28

-L-
PI Sta 555+33.32
Δ = 10° 16' 02.6" (LT)
D = 0° 52' 23.3"
L = 1,175.91'
T = 589.53'
R = 6,562.00'
SE = 0.025
R0 = 148.00'
DS = 60 mph

PIs Sta 561+69.03
Θs = 0° 38' 46.1"
Ls = 148.00'
LT = 98.67'
ST = 49.33'

-SERVEXT-
PI Sta 18+96.44
Δ = 8° 19' 25.3" (LT)
D = 1° 54' 35.5'
L = 435.83'
T = 218.30'
R = 3,000.00'
SE = NC
DS = 30 mph

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

ROBERT B. HARDISON

RAYMOND W. HARDISON

UNKNOWN OWNER

UNKNOWN OWNER

BARBARA H. GIBBLE

MATCH LINE STA. 561+00 SEE SHEET 38

MATCH LINE STA. 575+00 SEE SHEET 40

SPECIAL LATERAL 'V' DITCH SEE DETAIL PP

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL QQ

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL KK

MEDIAN 'V' DITCH SEE DETAIL NN

TDE

RETAIN EXIST R/W

RETAIN PIPE

36" RCP-III

18" RCP-III

2GI

2GI-D

REMOVE

15' SCE-V

N 5° 09' 38.7" W

N 5° 16' 08.1" W

SR 1162

US 70

245' BST

45' BST

17.5' BST

13' BST

9.5' BST

ISFD

HTR

GR

CLYDE BELANGIA

SHIRLEY BELANGIA POWELL

EMMA C. HARTFORD

EMMA CATON BELANGIA

DALE WAYNE MAGEE

R.L. BELANGIA

NANCY C. BAREFOOT

WILLIAM JACKSON ROWE

SAMMY E. EBRON

SITE 47

3X

CL I RIP RAP

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SEE SHEETS 69 FOR PROFILE -L-
SEE SHEETS 93 FOR PROFILE -SERVEXT-
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/16/2018
mgberry
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	39
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 143 OF 165

-L- PI Sta 555+33.32
Δ = 10° 16' 02.6" (LT)
D = 0° 52' 23.3"
L = 1,175.91'
T = 589.53'
R = 6,562.00'
SE = 0.025
RO = 148.00'
DS = 60 mph

PIs Sta 561+69.03
Θs = 0° 38' 46.1"
Ls = 148.00'
LT = 98.67'
ST = 49.33'

-SERVEXT-
PI Sta 18+96.44
Δ = 8° 19' 25.3" (LT)
D = 1° 54' 35.5'
L = 435.83'
T = 218.30'
R = 3,000.00'
SE = NC
DS = 30 mph

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

ROBERT B. HARDISON

RAYMOND W. HARDISON

UNKNOWN OWNER

UNKNOWN OWNER

BARBARA H. GIBBLE

-L- CS Sta. 561+19.69

-SERVEXT- PT Sta. 21+13.97

-SERVEXT- POT Sta. 21+64.81

-L- ST Sta. 562+67.69

-L- PC Sta. 573+26.28

565

570

N 5° 09' 38.7" W

N 5° 16' 08.1" W

SPECIAL LATERAL 'V' DITCH SEE DETAIL PP

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL KK

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL QQ

MEDIAN 'V' DITCH SEE DETAIL NN

RETAIN EXIST R/W

RETAIN PIPE

REMOVE

36" RCP-III

18" RCP-III

2GI

2GI-D

TDE

MATCH LINE STA. 561+00 SEE SHEET 38

MATCH LINE STA. 575+00 SEE SHEET 40

SITE 47

3X

CLYDE BELANGIA

SHIRLEY BELANGIA POWELL

EMMA C. HARTFORD

EMMA CATON BELANGIA

DALE WAYNE MAGEE

R.L. BELANGIA

R.L. BELANGIA

NANCY C. BAREFOOT

WILLIAM JACKSON ROWE

SAMMY E. EBRON

CL I RIP RAP

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SEE SHEETS 69 FOR PROFILE -L-
SEE SHEETS 93 FOR PROFILE -SERVEXT-
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

REVISIONS

7/13/2018 - PARCEL 39 - REVISED TOE STATION -L- 563+14 TO 563+64 RT
PARCEL 38 - ADDED TOE STATION -L- 561+00 TO 561+78 LT

8/17/99

11/16/2018
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$$$$$$$$SYSTIME$$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$$FILENAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	41
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

PERMIT DRAWING SHEET 144 OF 167

REVISIONS

8/17/99

8/14/2018 - PARCELS 40 & 41 - REMOVED PUE
PARCELS 40 & 41 - ADDED TCE
10/29/2018 - PARCEL 1 - ADDED PUE -RPICD- STATION 23+60 TO 24+20 RT
PARCEL 1 - REMOVED TCE -RPICD- STATION 24+20 TO 32+80 RT

7/13/2018 - PARCEL 1 - ADDED TCE STATION -RPICD- 24+20 TO 37+70 RT
ADDED TCE STATION -RPICD- 22+90 TO 37+70 RT
PARCELS 1, 40 & 41 - REVISED RW STATION -RPICD- 30+64 TO 29+00 RT
PARCEL 40 - STOPPED CA AND STARTED RW STATION -RPICD- 36+39.40 RT
PARCEL 41 - CHANGED CA TO RW

SITE 3

50' 0' 50' 100' 150'
GRAPHIC SCALE

NAD 83 NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

MATCH LINE -RP1A- STA. 4+00 SEE SHEET 8

MATCH LINE -RP1AB- STA.15+00 SEE SHEET 7

MATCH LINE -RP1CD- STA. 23+60 SEE SHEET 7

MATCH LINE -RP1AB- STA.29+00 SEE SHEET 42

SITE 3

Q10 = 44CFS
V10 = 1.35FPS

Q10 = 1.4CFS
V10 = 0.23FPS

EXCAVATION

FILL IN WETLANDS

MECH. CLEARING

FILL IN WETLANDS

N 43° 19' 42.6" W

N 51° 08' 32.8" W

EXCAVATION

Q10 = 37.7CFS
V10 = 1.2FPS

SITE 2

FILL IN WETLANDS

EXCAVATION

W1

W2

2X

CL I RIP RAP EST. 15 TONS EST. 30 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CLASS I RIP RAP EST. 15 TONS EST. 30 SY GF

SPECIAL CUT B' BASE DITCH SEE DETAIL A

SPECIAL CUT 8' BASE DITCH SEE DETAIL OOO

SPECIAL CUT 5' BASE DITCH SEE DETAIL MMM

REMOVE APPROX. 12'+/- OF PIPE TO OUTLET AT BASE OF DITCH

SPECIAL CUT 5' BASE DITCH SEE DETAIL NNN

ARMISTEAD PROPERTIES, LLC.

40

MARINE FEDERAL CREDIT UNION

41

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

SEE SHEET 73 FOR PROFILE -RPIAB-
SEE SHEET 76 AND 77 FOR PROFILE -RPICD-
SEE SHEET 71 FOR PROFILE -RPIA-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/16/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	41
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

PERMIT DRAWING SHEET 145 OF 167

SITE 3

50' 0' 50' 100' 150'
GRAPHIC SCALE

NAD 83

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

MATCH LINE -RP1A- STA. 4+00 SEE SHEET 8

MATCH LINE -RP1AB- STA.15+00 SEE SHEET 7

MATCH LINE -RP1CD- STA. 23+60 SEE SHEET 7

MATCH LINE -RP1AB- STA.29+00 SEE SHEET 42

SITE 3

Q10 = 44CFS
V10 = 1.35FPS

Q10 = 1.4CFS
V10 = 0.23FPS

EXCAVATION

FILL IN WETLANDS

N 43° 19' 42.6" W

N 51° 08' 32.8" W

MECH. CLEARING

FILL IN WETLANDS

EXCAVATION

Q10 = 37.7CFS
V10 = 1.2FPS

SITE 2

EXCAVATION

FILL IN WETLANDS

EXCAVATION

W1

W2

2X

CL I RIP RAP EST. 15 TONS EST. 30 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CLASS I RIP RAP EST. 15 TONS EST. 30 SY GF

SPECIAL CUT B' BASE DITCH SEE DETAIL A

SPECIAL CUT 8' BASE DITCH SEE DETAIL OOO

SPECIAL CUT 5' BASE DITCH SEE DETAIL MMM

REMOVE APPROX 12+/- OF PIPE TO OUTLET AT BASE OF DITCH

REMOVE SYSTEM

ARMISTEAD PROPERTIES, LLC.

40

MARINE FEDERAL CREDIT UNION

41

DENOTES FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

SEE SHEET 73 FOR PROFILE -RPIAB-
SEE SHEET 76 AND 77 FOR PROFILE -RPICD-
SEE SHEET 71 FOR PROFILE -RPIA-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

REVISIONS

8/17/99

8/14/2018 - PARCELS 40 & 41 - REMOVED PUE
PARCELS 40 & 41 - ADDED TCE
10/29/2018 - PARCEL 1 - ADDED PUE -RPICD- STATION 23+60 TO 24+20 32+80 RT
PARCEL 1 - REMOVED TCE -RPICD- STATION 24+20 TO 32+80 RT

7/13/2018 - PARCEL 1 - ADDED TCE STATION -RPICD- 24+20 TO 37+70 RT
ADDED TCE STATION -RPICD- 22+99 TO 24+20 RT
PARCELS 1, 40 & 41 - REVISED RW STATION -RPICD- 30+64 TO 29+00 RT
PARCEL 40 - STOPPED CA AND STARTED RW STATION -RPICD- 36+39.40 RT
PARCEL 41 - CHANGED CA TO RW

$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$

11/16/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	42
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
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919 781-4626 VOICE
919 781-4869 FAX
NC License No. F-0105

55

PERMIT DRAWING
SHEET 146 OF 167

SITE 3

MECH. CLEARING

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

HAVELOCK CITY LIMIT

CITY OF HAVELOCK

COMMUNITY CHRISTIAN FELLOWSHIP, INC.

FIRST FLIGHT FEDERAL CREDIT UNION

NATIONAL RETAIL PROPERTIES, LP

NAD 83

SEE SHEET 41

SEE SHEET 42A

MATCH LINE -RP1AB- STA 29+00

MATCH LINE -RP1AB- STA 40+00

MARINE FEDERAL CREDIT UNION
41

DANIEL G. KAMIN HAVELOCK ENTERPRISES
42
(NO CLAIM)

JOEL R. BANKS
43
(NO CLAIM)

WADE CARY ENTERPRISES, INC.
44
(NO CLAIM)

EL CERRO GRANDE #6, INC.
45
(NO CLAIM)

EL CERRO GRANDE #6, INC.
45
(NO CLAIM)

BOB HILL ENTERPRISES, INC.
46
(NO CLAIM)

SKYLINE BIGLOBE INVESTORS, LL.

50' 0' 50' 100' 150'
GRAPHIC SCALE

DENOTES MECHANIZED CLEARING

SEE SHEETS 74 FOR PROFILE -RPIAB-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

REVISIONS

8/17/99 -
7/13/2018 - PARCEL 41 - REVISED RW STATION -RPICD- 29+00 TO 30+25 RT
PARCEL 41 - CHANGED CA TO RW
PARCELS 42,43,44,45 - REMOVED RW STATION 31+00 TO 40+00 RT
PARCEL 1 - REVISED TCE STATION -RP1AB- 35+00 TO 35+77 LT
PARCEL 54 - NEW PARCEL NUMBER, ADDED TCE STATION -RP1AB- 37+90 TO 38+30 LT
8/14/2018 - PARCELS 41,42,43,44,45 - REMOVED PUE
PARCEL 41 - ADDED TCE

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

11/16/2018
mgberry
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	42
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brock E. Anderson

moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE
(919) 781-4869 FAX
NC License No. F-0105

55

PERMIT DRAWING SHEET 147 OF 167

REVISIONS

7/13/2018 - PARCEL 41 - REVISED RW STATION -RPICD- 29+00 TO 30+25 RT
PARCEL 41 - CHANGED CA TO RW
PARCELS 42,43,44,45 - REMOVED RW STATION 31+00 TO 40+00 RT
PARCEL L - REVISED TCE STATION -RPIAB- 35+00 TO 35+77 LT
PARCEL 54 - NEW PARCEL NUMBER, ADDED TCE STATION -RPIAB- 37+90 TO 38+30 LT

8/14/2018 - PARCELS 41,42,43,44,45 - REMOVED PUE
PARCEL 41 - ADDED TCE

8/17/99

SITE 3

MECH. CLEARING

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

HAVELOCK CITY LIMIT
CITY OF HAVELOCK

COMMUNITY CHRISTIAN FELLOWSHIP, INC.

FIRST FLIGHT FEDERAL CREDIT UNION

NAD 83

NATIONAL RETAIL PROPERTIES, LP

MATCH LINE -RPIAB- STA 29+00 SEE SHEET 41

MATCH LINE -RPIAB- STA 40+00 SEE SHEET 42A

HAVELOCK HWY 70, LLC.
(42)
(NO CLAIM)

JOEL R. BANKS
(43)
(NO CLAIM)

WADE CARY ENTERPRISES, INC.
(44)
(NO CLAIM)

EL CERRO GRANDE #6, INC.
(45)
(NO CLAIM)

EL CERRO GRANDE #6, INC.
(45)
(NO CLAIM)

BOB HILL ENTERPRISES, INC.
(46)
(NO CLAIM)

SKYLINE BIGLOBE INVESTORS, LL.

MARINE FEDERAL CREDIT UNION
(41)

DANIEL G. KAMIN HAVELOCK ENTERPRISES

GRAPHIC SCALE
50' 0' 50' 100' 150'

DENOTES MECHANIZED CLEARING

SEE SHEETS 74 FOR PROFILE -RPIAB-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/16/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	44
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER
T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER
Brook E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE
919 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 148 OF 167

REVISIONS

7/13/2018 – PARCELS 4,48 – CHANGED PUE TO DUE AND REVISED AREA STATION -Y3- 65+50 TO 74+00 RT
PARCEL 48 – ADDED PDE AND REMOVED TCE STATION -Y3- 61+00 TO 66+72 LT
PARCELS 4,47 – REVISED TCE STATION -Y3- 61+00 TO 65+64 LT
PARCEL 4 – ADDED PDE STATION -Y3- 64+00 TO 66+72 LT
PARCEL 47 – ADDED RW STATION -Y3- 64+00 TO 66+72 LT
PARCEL 57 – NEW PARCEL NUMBER ADDED RW AND TCE STATION -Y3- 65+50 TO 74+00 RT
PARCELS 56,58,59,61 – NEW PARCELS NUMBERS ADDED RW STATION -Y3- 68+35 TO 74+00 LT

8/14/2018 – PARCELS 4,48 – ADJUSTED RW AND REMOVED TCE STATION -Y3- 62+32 TO 66+40 RT
PARCELS 4,47 – REVISED TCE STATION -Y3- 61+00 TO 66+40 RT
PARCEL 4 – ADDED PDE STATION -Y3- 64+00 TO 66+72 LT
PARCEL 47 – ADDED RW STATION -Y3- 64+00 TO 66+72 LT
PARCEL 57 – NEW PARCEL NUMBER ADDED RW AND TCE STATION -Y3- 65+50 TO 74+00 RT
PARCELS 56,58,59,61 – NEW PARCELS NUMBERS ADDED RW STATION -Y3- 68+35 TO 74+00 LT

10/29/2018 – PARCELS 4,48 – REVISED DUE STATION -Y3- 62+32 TO 66+40 RT

8/17/99

NAD 83

W10
LATERAL 3' BASE DITCH SEE DETAIL U
Q10 = 15.3cfs
V10 = 1.3fps

SITE 21

MATCH LINE -Y3- STA. 61+00 SEE SHEET 17

-Y3DET-

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

LATERAL 3' BASE DITCH SEE DETAIL SSS

SPECIAL LATERAL 'V' DITCH SEE DETAIL S

-Y3- PT Sta. 68+40.15

SPECIAL LATERAL 'V' DITCH SEE DETAIL R

-Y3- PC Sta. 61+98.86

Q10 = 8.8cfs
V10 = 1.6fps

LATERAL 2' BASE DITCH SEE DETAIL M

SPECIAL LATERAL 'V' DITCH SEE DETAIL S

CL B RIP RAP EST. 8 TONS EST. 21 SY GF

REMOVE EXIST. 18" RCP

END CONSTRUCTION -Y3- STA.74+00.00

N 24° 41' 48.0" E

JEAN E. SANBORN (47)
LYNN WILSON, et ux (57)
GREGORY D. KELLEY, et ux (58)
SHIZUE HIROTA CLARK
SHARON D. THURSTON, et vir
JUSTIN WAYNE STALLINGS (59)
WILLIAM L. LUZADDER (60)
FOREST OAKS MEMORIAL GARDENS, INC. (61)
ROBERT SAMUEL CLARK, et ux (48)

SITE 20

WEYERHAEUSER COMPANY (4)

ONLY IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN ON THIS SHEET. FOR ADDITIONAL IMPACTS DUE TO DETOUR SEE PSH 2B-3 (PERMIT DRAWING SHEETS 7 OF 167).

DENOTES MECHANIZED CLEARING

DENOTES EXCAVATION IN WETLAND

DENOTES TEMPORARY FILL IN WETLAND

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEET 79 FOR PROFILE -Y3-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$SHEETNAME$$$$
$$$$SHEETDGN$$$$

11/16/2018
mgberry
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	44
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 149 OF 167

REVISIONS

8/17/99 – PARCELS 4,48 – CHANGED PDE TO DUE AND REVISED AREA STATION -Y3- 62+32 TO 66+40 RT
8/14/2018 – PARCELS 4,48 – REVISED DUE STATION -Y3- 62+32 TO 66+40 RT
PARCELS 4,47 – REVISED TCE STATION -Y3- 6+00 TO 66+70 LT
10/29/2018 – PARCELS 4,48 – REVISED DUE STATION -Y3- 64+00 TO 65+64 LT
PARCEL 4 – ADDED PDE STATION -Y3- 64+00 TO 66+72 LT
PARCEL 47 – ADDED RW STATION -Y3- 66+72 TO 67+78 LT
PARCEL 57 – NEW PARCEL NUMBER ADDED RW AND TCE STATION -Y3- 68+35 TO 72+50 LT
7/13/2018 – PARCEL 58-58.50 ft – NEW PARCEL NUMBER ADDED RW STATION -Y3- 68+35 TO 72+50 LT

W10
LATERAL 3' BASE DITCH SEE DETAIL U
Q10 = 15.3cfs
V10 = 1.3fps

SITE 21

MATCH LINE -Y3- STA. 61+00 SEE SHEET 17

-Y3- PC Sta. 61+98.86

Q10 = 8.8cfs
V10 = 1.6fps

SITE 20

WEYERHAEUSER COMPANY

4

SHARON D. THURSTON, et vir — 59 — SHIZUE HIROTA CLARK — JUSTIN WAYNE STALLINGS — 60 — WILLIAM L. LUZADDER — 61 — FOREST OAKS MEMORIAL GARDENS, INC.

JEAN E. SANBORN — 47 — LYNN WILSON, et ux — 57 — GREGORY D. KELLEY, et ux — 58 — SHIZUE HIROTA CLARK

-Y3- PT Sta. 68+40.15

-Y3- Sta. 74+00.00 END CONSTRUCTION

N 24° 48' 48.0" E

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

LATERAL 3' BASE DITCH SEE DETAIL SSS

SPECIAL LATERAL 'V' DITCH SEE DETAIL S

SPECIAL LATERAL 'V' DITCH SEE DETAIL R

LATERAL 2' BASE DITCH SEE DETAIL M

CL B RIP RAP EST. 6 TONS EST. 21 SY GF

REMOVE EXIST. 18" RCP

ONLY IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN ON THIS SHEET. FOR ADDITIONAL IMPACTS DUE TO DETOUR SEE PSH 2B-3 (PERMIT DRAWING SHEETS 7 OF 167).

DENOTES MECHANIZED CLEARING

DENOTES EXCAVATION IN WETLAND

ROBERT SAMUEL CLARK, et ux — 1 — 1 — 48 — DENOTES TEMPORARY FILL IN WETLAND

DENOTES FILL IN WETLAND

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEET 79 FOR PROFILE -Y3-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

11/16/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh44.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-1015	45
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781 4626 VOICE 919 781 4869 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 150 OF 167

REVISIONS

7/13/2018 - PARCELS 2,49 - ADDED PDE STATION -Y4- 33+95 TO 40+80 RT
PARCEL 2 - ADDED PDE STATION -Y4- 37+68 TO 37+79 RT
PARCEL 2 - CHANGED PUE TO DUE STATION -Y4- 37+68 TO 37+79 RT
PARCELS 2,50,51 - REVISED DUE STATION -Y4DR- 0+60 TO 1+50 LT
PARCELS 2,50,51 - CHANGED PUE TO DUE STATION -Y4- 33+50 TO 40+80 LT

10/29/2018 - PARCELS 2,49,51 - REVISED DUE FROM -Y4- STA.33+59.50 TO 40+80 LT
PARCELS 51 & 2 - ADDED PUE
PARCEL 2 - REVISED PUE,DUE,PDE AND TCE

8/14/2018 - PARCEL 50 - REVISED DUE
PARCEL 50 - REVISED PUE AND PUE
PARCEL 2 - REVISED DUE STATION -Y4- 35+33 TO 40+80 LT
PARCEL 2 - REVISED DUE,PUE,AND TCE STATION -Y4- 37+79 RT

8/17/99

MICHAEL O. WOODRUFF, et ux

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NAD 83

NAD 83

35

EDWARD J. DESTEFANO, et ux

WILLIAM LESLIE GRIFFIN

MARGARET ELLEN JONES

50

DANIEL F. WALSH, IV, et ux

51

WILLIAM D. WANICK, et ux

MALCOLM D. CIESZKO

49

UNITED STATES AGRICULTURE
CROATAN NATIONAL FOREST

2

SITE 42

Q10 = 3.0 CFS
V10 = 3.0 FPS

Q10 = 13.4 CFS
V10 = 2.9 FPS

2X

POND

PUE

DU

DUE

HW

BZ 1

RETAIN EXIST. 12" RCP

12" CONC

RETAIN EXIST. 12" RCP

72" RCP-IV BURIED 1FT REMOVE EXIST. 42" CMP

SUNSET ROAD SR 1791 (195 BST)

SUNSET ROAD SR 1747 (195 BST)

TIE TO EXISTING DITCH

RIPRAP SHALL BE INSTALLED FLUSH WITH CHANNEL BANKS AND BED

PULLEY ROAD SR 1787 (165 BST)

CL I RIP RAP EST. 20 TONS EST. 39 SY GF

STANDARD 2' BASE DITCH SEE DETAIL FFF S=0.0578 FT/FT DDE = 21 CY CL I RIP RAP=30 TONS

LATERAL 2' BASE DITCH SEE DETAIL T DDE = 105 CY

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL WW DDE = 42 CY

WOODS

PDE

TB 2GU

TB 2GL

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

15" CAP WELDOWN

MATCH LINE -Y4- STA. 40+80 SEE SHEET 21

SITE 43

Q10 = 1.6 CFS
V10 = 2.7 FPS

Q10 = 7.7 CFS
V10 = 2.7 FPS

2X

BZ 1

PDE

TB

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL WW DDE = 869 CY

LATERAL 2' BASE DITCH SEE DETAIL T DDE = 869 CY

F F — DENOTES FILL IN WETLAND

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

E E — DENOTES EXCAVATION IN WETLAND

S S — DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEET 83 FOR PROFILE -Y4-
SEE SHEET 90 FOR PROFILE -Y4DR-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

11/16/2018
mgberry
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	45
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE
919 781-4869 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 151 OF 167

REVISIONS

8/17/99

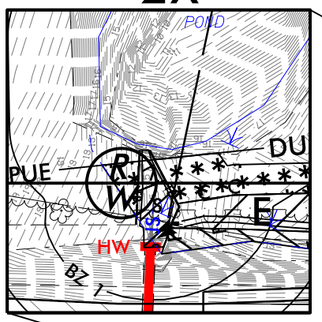
7/13/2018 - PARCELS 2,49 - ADDED PDE STATION -Y4- 33+95 TO 40+80 RT
PARCEL 2,50,51 - REVISED PUE STATION -Y4- 33+50 TO 40+80 LT

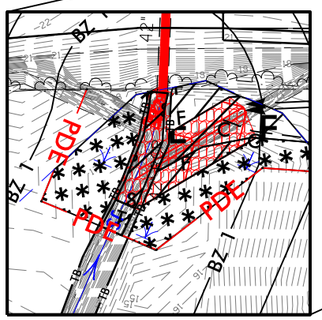
10/29/2018 - PARCELS 2,49,51 - REVISED DUE FROM -Y4- STA.33+59.50 TO 40+80 LT
PARCELS 51 & 2 - ADDED PUE
PARCEL 2 - REVISED PUE,DUE,PDE AND TCE

8/14/2018 - PARCEL 50 - REVISED DUE
PARCEL 2 - REVISED DUE STATION -Y4- 35+33 TO 40+80 LT
REVISED DUE,PUE,AND TCE STATION -Y4- 37+62 RT

PARCEL 2 - REVISED DUE STATION -Y4- 37+68 TO 37+79 RT
PARCEL 2 - REVISED TCE STATION -Y4DR- 10+80 TO 13+06 LT
PARCELS 2,50,51 - CHANGED PUE TO DUE STATION -Y4- 33+50 TO 40+80 LT

2X





2X

MICHAEL O. WOODRUFF, et ux

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NAD 83

NAD 83

EDWARD J. DESTEFANO, et ux

WILLIAM LESLIE GRIFFIN

MARGARET ELLEN JONES

DANIEL F. WALSH, IV, et ux

WILLIAM D. WANICK, et ux

MALCOLM D. CIESZKO

UNITED STATES AGRICULTURE
CROATAN NATIONAL FOREST

35

50

51

49

2

SITE 42

Q10 = 3.0 CFS
V10 = 3.0 FPS

Q10 = 13.4 CFS
V10 = 2.9 FPS

Q10 = 1.6 CFS
V10 = 2.7 FPS

Q10 = 7.7 CFS
V10 = 2.7 FPS

SITE 43

SUNSET ROAD
SR 1741 (SR 1155 BST)

FULLER ROAD
SR 1747 (SR 1155 BST)

RETAIN EXIST. 12" RCP

RETAIN EXIST. 12" RCP

72" RCP (V) BURIED 1FT REMOVE FIRST 42" CMP

TIE TO EXISTING DITCH

RIPRAP SHALL BE INSTALLED FLUSH WITH CHANNEL BANKS AND BED

CL I RIP RAP
EST. 20 TONS
EST. 39 SY GF

STANDARD 2' BASE DITCH
SEE DETAIL FFF
S=0.0578 FT/FT
DDE = 21 CY
CL I RIP RAP = 30 TONS

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL WW
DDE = 869 CY

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 105 CY

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL WW
DDE = 42 CY

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

15" CAMP WELDBOND

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 869 CY

F F DENOTES FILL IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

50' 0' 50' 100' 150'
GRAPHIC SCALE

MATCH LINE -Y4- STA. 40+80 SEE SHEET 21

SEE SHEET 83 FOR PROFILE -Y4-
SEE SHEET 90 FOR PROFILE -Y4DR-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$SYSNAME$$$$ $$$$DGN$$$$

11/16/2018
mgberry
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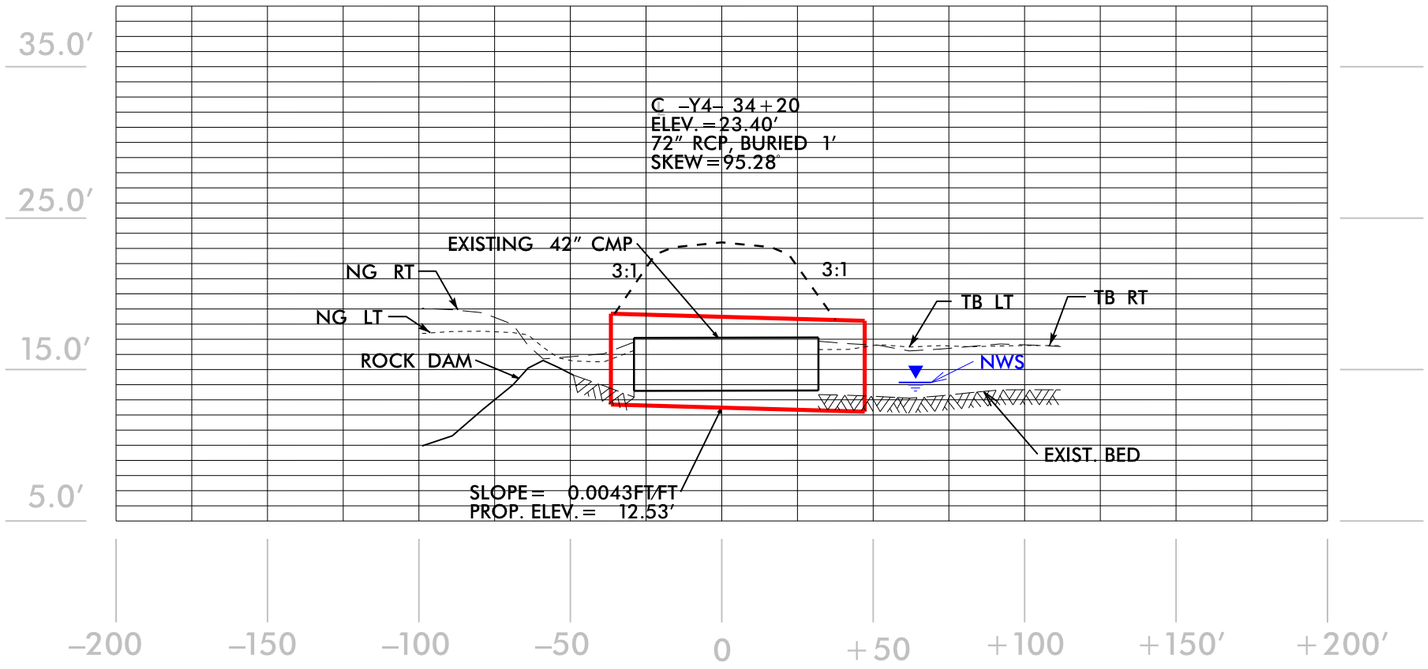

PROFILE

SITE 42 & 43

NCDOT
DIVISION OF HIGHWAYS
CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)
US 70 (HAVELOCK BYP)
FROM SOUTH OF CARTERET
/ CRAVEN COUNTY LINE
TO SOUTH OF SR 1176

SHEET 152 OF 167 08/01/2018

8/2/2018
mgberry
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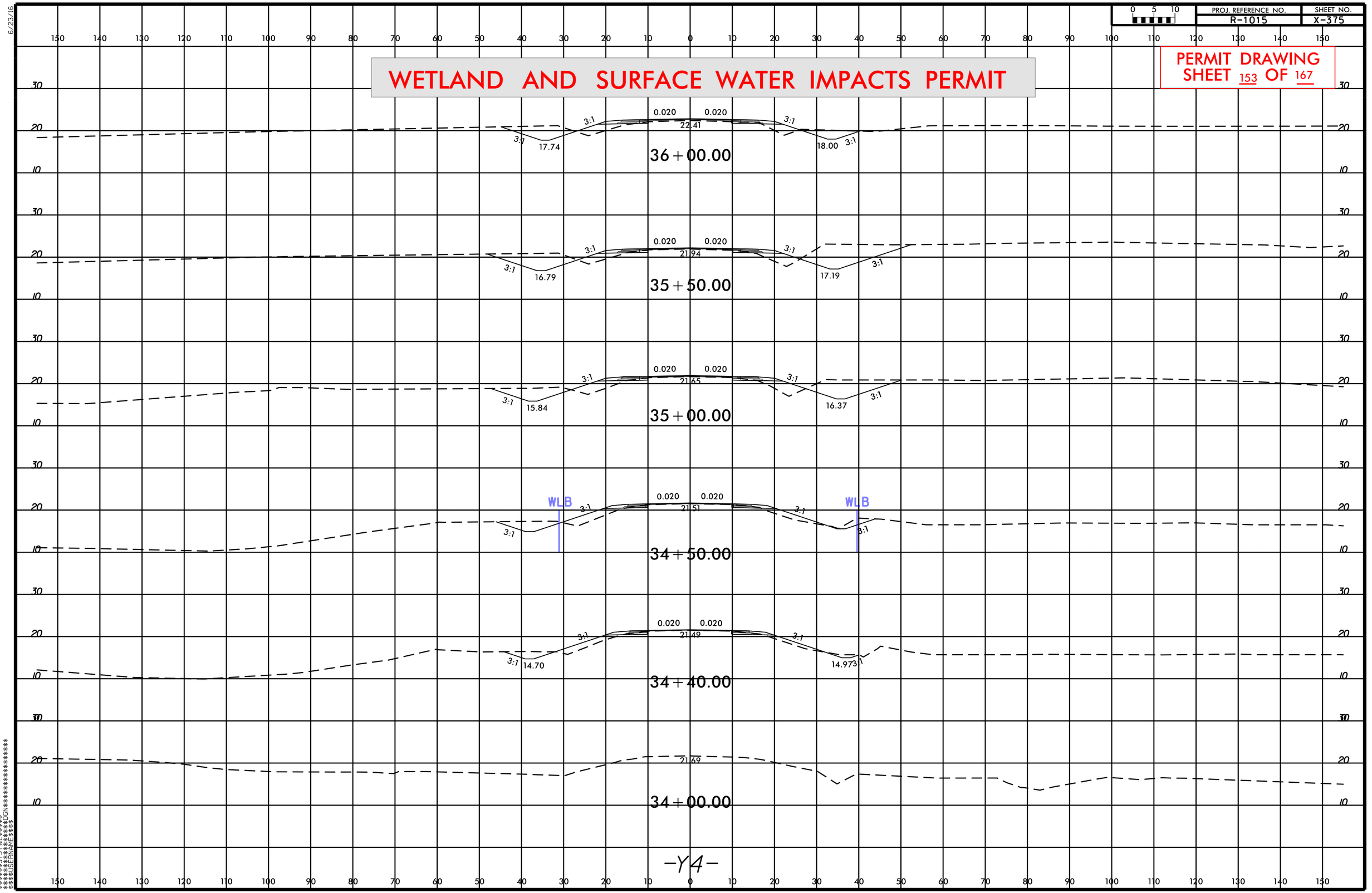
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-375

PERMIT DRAWING
SHEET 153 OF 167

WETLAND AND SURFACE WATER IMPACTS PERMIT



-Y4-

8/2/2018
mgkerry
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$$$$$$$SYSTIME$$$$$
$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	46
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 154 OF 167

REVISIONS

7/13/2018 - PARCEL 52 - ADDED TOE STATION -Y4- 55+51 TO 57+16 LT
PARCEL 52 - ADDED TOE STATION -Y4- 58+45 TO 59+96 LT
8/14/2018 - PARCEL 52 - REVISED PUE AND TOE STATION -Y4- 53+67 TO 55+16 LT AND STATION -Y4- 58+75 LT
PARCEL 52 - REVISED TOE STATION -Y4- 58+87 TO 59+37 RT
10/29/2018 - PARCELS 2 & 52 - REVISED PUE -Y4- LT STA 48+30 TO STA 60+22
PARCELS 2 & 52 - REVISED PUE -Y4- RT STA 56+71 TO 60+22
PARCEL 2 - REVISED TOE STATION -Y4- 52+60 TO 53+00 RT
PARCEL 2 - REVISED TOE STATION -Y4- 53+50 TO 53+67 RT
PARCEL 2 - CHANGED PUE TO DUE STATION -Y4- 06+50 TO 08+00 RT
PARCEL 2 - ADDED PDE STATION -Y4- 58+87 TO 59+37 RT
PARCEL 2 - ADDED TDE STATION -Y4- 51+45 TO 51+85 LT
PARCEL 2 - ADDED TDE STATION -Y4- 52+60 TO 53+05 LT
7/13/2018 - PARCEL 2 - REVISED TOE STATION -Y4- 49+00 TO 50+53 RT

8/17/99

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

DENNIS R. LAUGHLIN
52

NAD 83

50

55

60

-Y4- PC Sta. 49+51.58

-Y4- PT Sta. 50+76.36

-Y4- PC Sta. 53+38.07

-Y4- PT Sta. 56+35.42

-Y4- POT Sta. 60+65.28

SITE 44

SEE ENLARGEMENT

MATCH LINE -Y4- STA. 48+30 SEE SHEET 21

PUE

PUE

PUE

PROJECT REFERENCE NO.	SHEET NO.
R-1015	46
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE 919 781-4869 FAX
NC License No.: F-0105

PERMIT DRAWING SHEET 155 OF 167

REVISIONS

7/13/2018 - PARCEL 52 - ADDED TOE STATION -Y4- 55+51 TO 57+16 LT
PARCEL 52 - ADDED TOE STATION -Y4- 58+45 TO 58+96 LT
8/14/2018 - PARCEL 52 - REVISED PUE AND TOE STATION
-Y4- 53+67 TO 55+16 LT AND STATION -Y4- 58+75 LT
REVISIONS
10/29/2018 - PARCEL 52 - ADDED TOE STATION -Y4- LT STA 48+30 TO
PARCEL STATION 56+60 TO 60+86 AND TOE
-PARCELS 2 & 52 - REVISED PUE -Y4- LT STA 48+30 TO
TO STA 60+22
-PARCELS 2 & 52 - REVISED PUE -Y4- RT STA 56+71 60 TO 60+22 23
- PARCEL 2 REVISED PUE AND DUE -Y4- LT STA 48+30 TO 55+60.32

7/13/2018 - PARCEL 2 - REVISED TOE STATION -Y4- 49+10.00 RT
PARCEL 2 - REVISED TOE STATION -Y4- 52+50.00 RT
PARCEL 2 - CHANGED PUE TO DUE STATION -Y4- 06+50 TO 08
PARCEL 2 - ADDED PDE STATION -Y4- 58+87 TO 59+37 RT
PARCEL 2 - ADDED TDE STATION -Y4- 51+45 TO 51+85 LT
PARCEL 2 - ADDED TDE STATION -Y4- 52+60 TO 53+05 LT

8/17/99

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

DENNIS R. LAUGHLIN
52

NAD 83

SITE 44

SEE ENLARGEMENT

SITE 45

-Y4- PC Sta. 49+51.58
-Y4- PT Sta. 50+76.36
-Y4- PC Sta. 53+38.07
-Y4- PT Sta. 56+35.42
-Y4- POT Sta. 60+65.28

MATCH LINE -Y4- STA. 48+30 SEE SHEET 21

PIPE INLET CHANNEL SEE DETAIL XX
TIE TO EXISTING DITCH
CL I RIP RAP
TIE PROP. DITCH TO NATURAL GROUND
STANDARD 3' BASE DITCH SEE DETAIL N S=1.032% DDE=20CY
SEE SPECIAL DETAIL (SHEET 45 OF 167)
LATERAL 3' BASE DITCH SEE DETAIL RR DDE = 63 CY
CLASS B RIP RAP EST. 5 TONS EST. 5 SY GF
CLASS B RIP RAP EST. 5 TONS EST. 5 SY GF
CLASS B RIP RAP EST. 10 TONS EST. 10 SY GF
CLASS B RIP RAP EST. 15 TONS EST. 30 SY GF
LATERAL 2' BASE DITCH SEE DETAIL T DDE = 29 CY
PIPE OUTLET CHANNEL SEE DETAIL YY
DITCH RAL GROUND
CL I RIP RAP
TIE TO EXISTING DITCH
SPECIAL LATERAL 3' BASE DITCH SEE DETAIL GGG
LATERAL 3' BASE DITCH SEE DETAIL GGG
MAINTAIN EXISTING DITCH
DITCH BLOCK SEE DETAIL ZZ
REMOVE EXIST 18" RCP
REMOVE
SPECIAL LATERAL V DITCH SEE DETAIL R
SPECIAL LATERAL V DITCH SEE DETAIL R
STANDARD 3' BASE DITCH SEE DETAIL N S=0.012 FT/FT DDE= 70 CY
SPECIAL LATERAL 3' BASE DITCH SEE DETAIL HHH
TIE PROP. DITCH TO NATURAL GROUND
-Y4- 87.00' 73.00' RT
END CONSTRUCTION -Y4- POT STA 59+37.00
N 45°45'38.6" E
SR 1747 (195' BSH)
W 66°32'36" E
PUE
PDE
DUE
TDE
HW
WOODS
GRAVEL DRIVE
PORCH
HTR
18" CONC
BZ 1
BZ 2

ONLY IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN ON THIS SHEET. FOR ADDITIONAL IMPACTS DUE TO DETOUR SEE PSH 2B-5 AND PSH 2B-6 (PERMIT DRAWING SHEETS 10 & 13 OF 167).

* * * * DENOTES MECHANIZED CLEARING

E E DENOTES EXCAVATION IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEET 83 FOR PROFILE -Y4-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
11/16/2018
mgberry
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11/16/2018
mgberry
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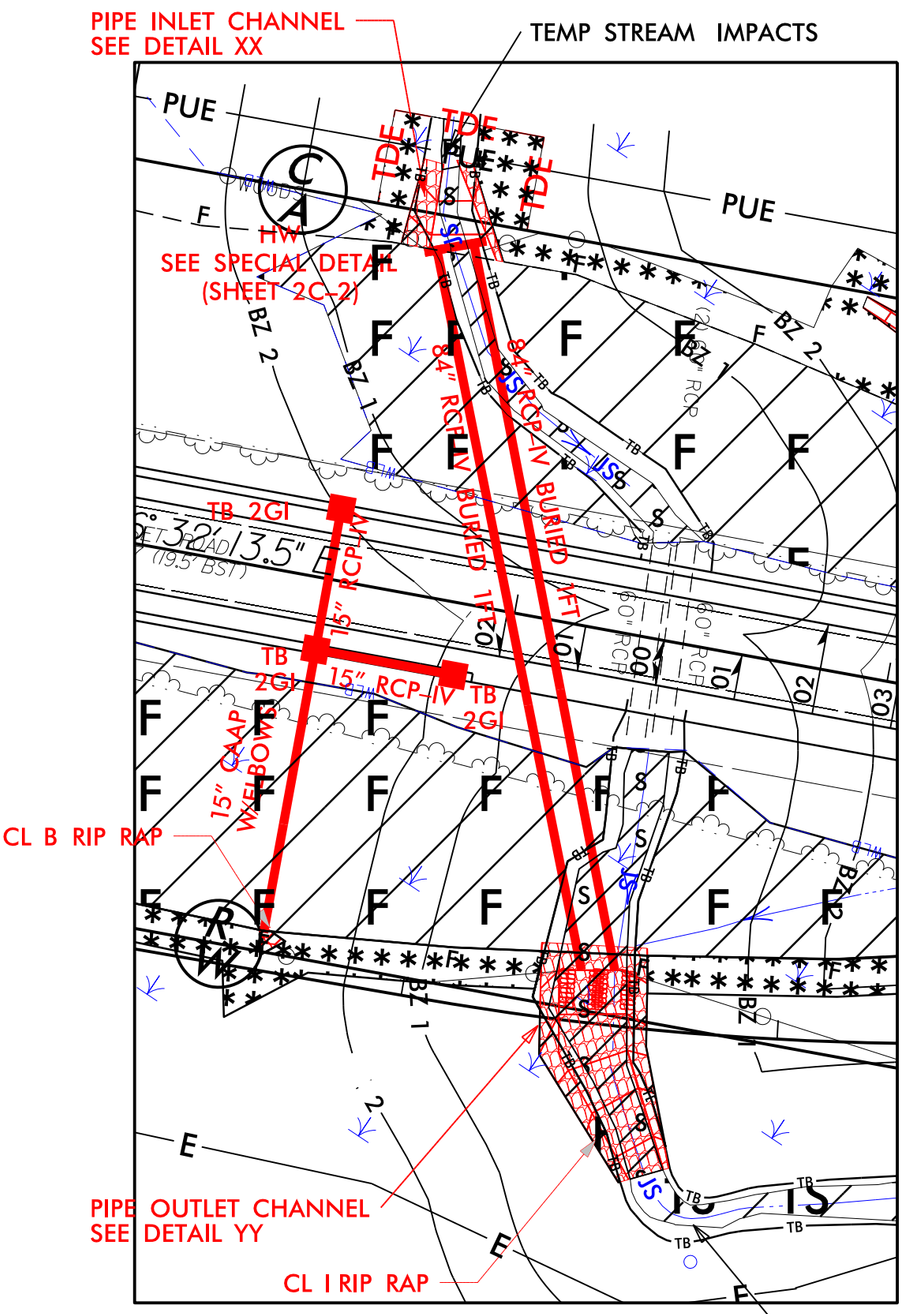
SITE 44



DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES HAND CLEARING

SITE 45

DENOTES TEMPORARY FILL IN WETLAND

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

SITE 44 & 45 ENLARGEMENT

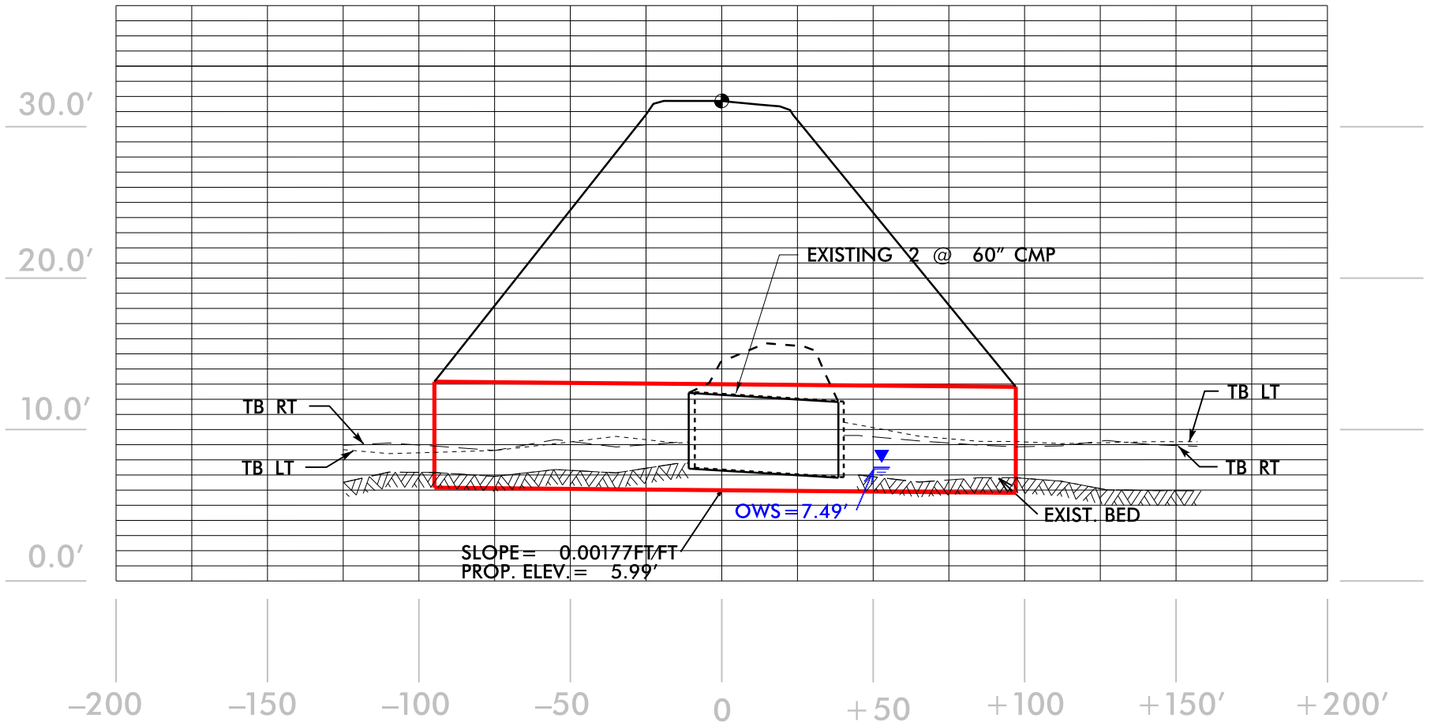
NCDOT

DIVISION OF HIGHWAYS
CRAVEN COUNTY

PROJECT: 34360.1.2 (R-1015)

UUS 70 (HAVELOCK BYP)
FROM SOUTH OF CARTERET / CRAVEN COUNTY LINE TO SOUTH OF SR 1176

℄ –Y4– 52+04
ELEV.=31.70′
2 @ 84″ RCP, BURIED 1′
SKEW=68.64°



PROFILE

SITE 44 & 45

NCDOT
DIVISION OF HIGHWAYS
CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)
US 70 (HAVELOCK BYP)
FROM SOUTH OF CARTERET / CRAVEN COUNTY LINE
TO SOUTH OF SR 1176

SHEET 157 **OF** 167 **08/01/2018**

8/2/2018
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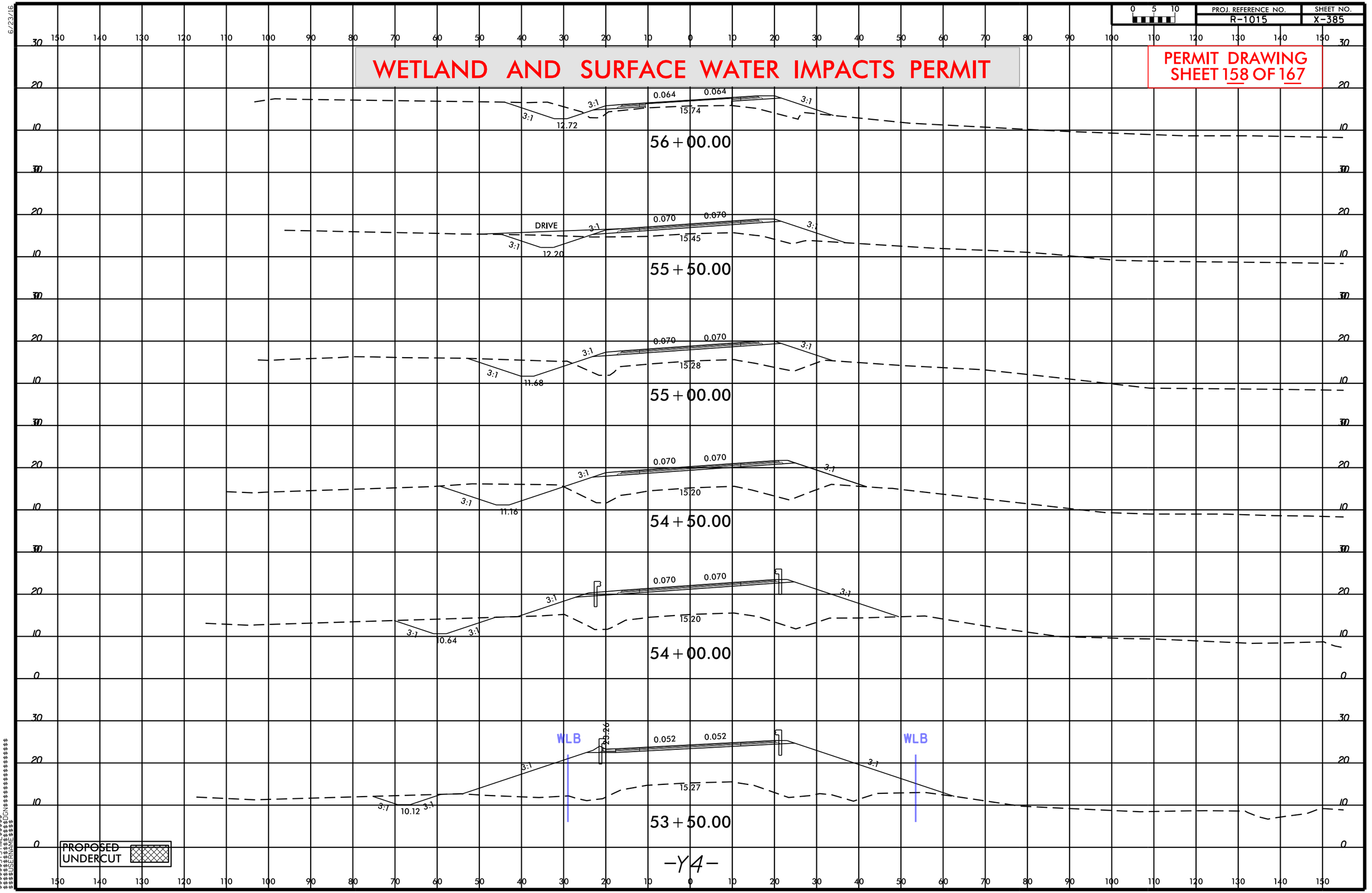
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-385

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 158 OF 167



8/2/2018
mgberry
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$$$$$$USERNAME$$$$

8/17/99

REVISIONS

7/13/2018 - PARCELS 53,62 - REVISED POE STATION -SRI162- 13+75 TO 15+10 RT
8/14/2018 - PARCEL 62 - REVISED POE STATION -SRI162- 15+10 TO 15+46 RT
PARCEL 53 - REVISED POE

PROJECT REFERENCE NO.	SHEET NO.
R-1015	47
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

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919 781-4626 VOICE 919 781-4869 FAX
NC License No. F-0105

PERMIT DRAWING
SHEET 159 OF 167

SITE 41

NAD 83

NO ASSOCIATED RECORDS FOUND FOR THIS STRUCTURE
RR ARM
RAILROAD SIGNAL BOX
SR 1761 18' BST
18" SCP
ELEC BOX
BEGIN CONSTRUCTION -RP2AC- STA. 38+30.60
WALLACE R. POYTHRESS
MTL S
HTR
EXIST R/W
18' BST
HICKMAN HILL LOOP RD
ISF BUS
ISFD
ELEC METER
48" CMP
12" CMP W/ 35SW
GR
RETAIN EXIST R/W
12" CONC
10.5' GR
18" CONC
RETAIN 18" RCP
WLB
35
-RP2AC-
4.5' BST
US 70
24.5' BST
FO
TC
DITCH
RW = 24.5'
RW = 124.36'
2GI
18" RCP III
N 17° 35' 51.3" W
-SRI162-
GREU (TL-2)
4.5' CONC C&G
ELEC BOX
-SRI162- POT Sta. 10+00.00
-SRI162- PC Sta. 12+24.78
SEMMES BLVD
EXTEND EX. 3@9'11" RCBC
BEGIN PAVING -SRI162- ST A.13+83.00
BEGIN CONSTRUCTION -SRI162- ST A.13+05.00
-RP2AC- PC Sta. 32+80.83
GTS
HOT BOX
CONC
BST
GENERATOR
TEMP. IMPACTS IN SURFACE WATER
MECH. CLEARING FILL IN WETLANDS
IMPACTS IN SURFACE WATER
MATCH LINE -RP2AC- STA. 45+00 SEE SHEET 48
JOHN TYLER JACKSON
TUCKER CREEK
50' 0' 50' 100' 150'
GRAPHIC SCALE
62

DENOTES MECHANIZED CLEARING

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

SEE SHEET 86 FOR PROFILE -RP2AC-
SEE SHEET 92 FOR PROFILE -SRI162-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/16/2018
mgberry
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	47
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

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RALEIGH, NORTH CAROLINA 27609
919 781-4626 VOICE
919 781-4869 FAX
NC License No. F-0105

PERMIT DRAWING SHEET 160 OF 167

SITE 41

TEMP. IMPACTS IN SURFACE WATER

MECH. CLEARING FILL IN WETLANDS

IMPACTS IN SURFACE WATER

MATCH LINE -RP2AC- STA. 45+00 SEE SHEET 48

BEGIN CONSTRUCTION -RP2AC- STA 38+30.60

BEGIN CONSTRUCTION -SR1162- STA 13+05.00

BEGIN PAVING -SR1162- STA 13+83.00

-RP2AC- PC Sta. 32+80.83

-SR1162- POT Sta. 10+00.00

-SR1162- PC Sta. 12+24.76

RETAIN EXIST R/W

RETAIN 18" RCP

EXTEND EX 3@9'-7" RCBC

N 17° 35' 51.3" W

SR 1761 18' BST

SR 1760

HICKMAN TILL LOOP RD

WALLACE R. POYTHRESS MTL S

JOHN TYLER JACKSON

TUCKER CREEK

GRAPHIC SCALE 50' 0' 50' 100' 150'

62

SEE SHEET 86 FOR PROFILE -RP2AC-
SEE SHEET 92 FOR PROFILE -SR1162-
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

DENOTES MECHANIZED CLEARING

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

REVISIONS

7/13/2018 - PARCELS 53,62 -REVISED POE STATION -SR1162- 13+75 TO 15+10 RT
8/14/2018 - PARCEL 53 - REVISED POE STATION -SR1162- 15+10 TO 15+46 RT

8/17/99

11162018
mgberry
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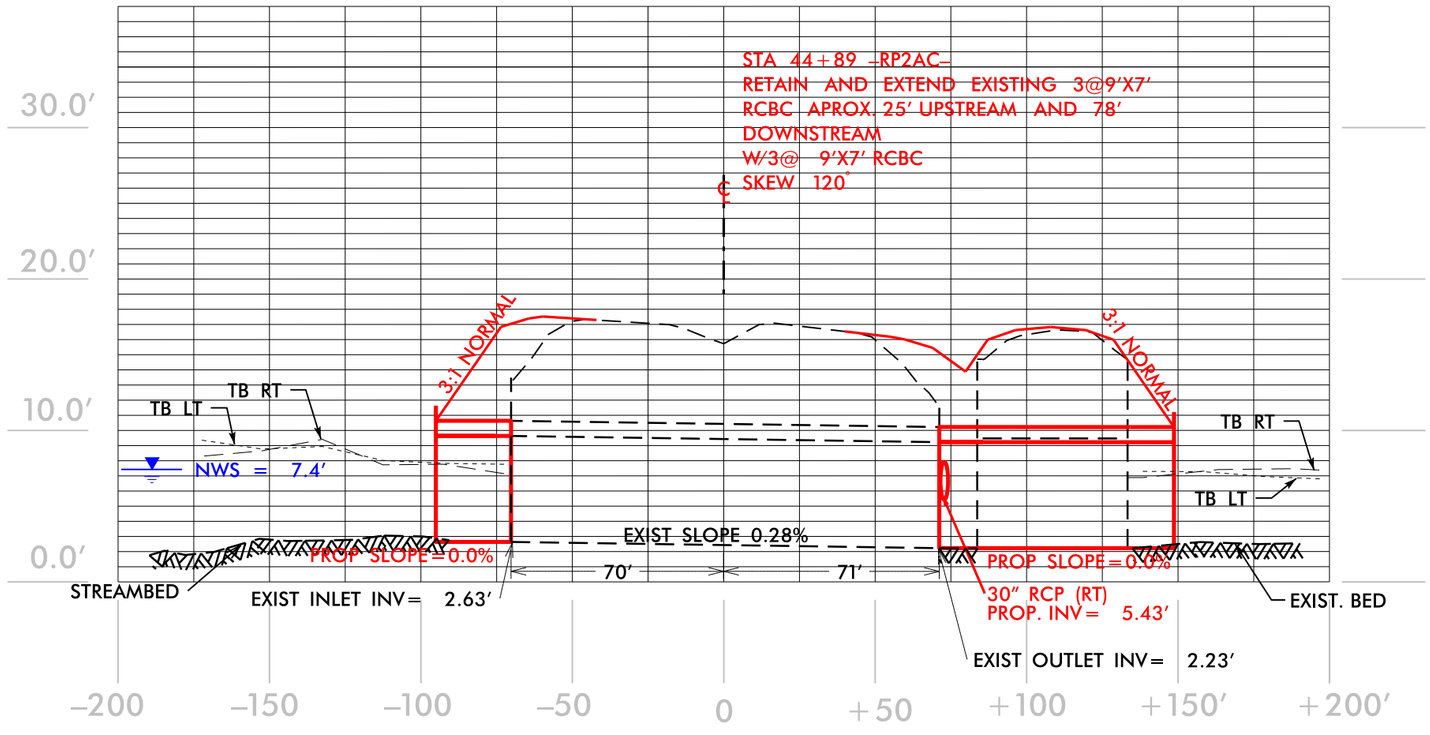
$$$$$$$SYSTIME$$$$$$$
$$$$$$$DGN$$$$$$$



PROFILE

SITE 41

NCDOT
DIVISION OF HIGHWAYS
CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)
US 70 (HAVELOCK BYP)
FROM SOUTH OF CARTERET
/ CRAVEN COUNTY LINE
TO SOUTH OF SR 1176

SHEET 161 OF 167 08/01/2018

8/2/2018
mgberry
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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-1015	X-402

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 162 OF 167

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

30 20 10 0 30 20 10 0

45+00.00

0.023 3:1 15.60 0.037 6:1 6:1 0.020 0.020 3:1

44+50.00

0.024 3:1 16.52 0.037 6:1 6:1 0.020 0.020 3:1

44+00.00

0.025 3:1 17.45 0.039 6:1 6:1 –SR1184– 0.020 0.020 3:1

43+50.00

WLB WLB 0.023 3:1 18.38 0.039 6:1 6:1 –SR1162– 0.028 0.020 3:1 WLB

43+00.00

0.022 3:1 19.16 0.037 5:1

–RP2AC–

9/2/2018
mgiberry
R:\Hydraulics\PERMITS_Environmental\Drawings\XPLR1015_Hyd_XPL_41.dgn
$$$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	48
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

PERMIT DRAWING SHEET 163 OF 167

REVISIONS

7/13/2018 - PARCEL 62 - ADDED PARCEL NUMBER
PARCEL 62 - REVISED TCE STATION -SRI162- 15+46 TO 16+10

8/17/99

SITE 41

NAD 83

WALTER J. POYTHRESS

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

13

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

2

RO = 1520'
DS = 50 mph

DS = 50 mph

RIP RAP EA.
STONE EA.
EA.

EXTEND EX. 3@9'X7' RCBC

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

-RP2AC- 15" RCP-III

SEE DETAIL B

2GI

REMOVE SYSTEM

2GI-A

18" RCP-III

30" RCP-III

-SRI162-

N 10° 18' 29" W

FILL IN WETLANDS

EXISTING R/W

RETAIN 8' CI

SPEC. LATERAL 'V' DITCH
SEE DETAIL AAA

SPECIAL LATERAL V DITCH
SEE DETAIL S

GRAVEL PARKING

END CONSTRUCTION
END PAVING
-SRI162- STA.16+27.00

-SRI162- PT Sta. 18+58.37

-SRI162- POT Sta. 19+24.56

-RP2AC- CS Sta. 52+23.75

-RP2AC- SRS Sta. 54+68.75

JOHN TYLER JACKSON

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEETS 86 AND 87 FOR PROFILE -RP2AC-
SEE SHEETS 92 FOR PROFILE -SRI162-
SEE SHEETS 2D-1 THRU 2D-2 FOR FRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

11/16/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh48.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-1015	48
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

PERMIT DRAWING SHEET 164 OF 167

8/17/99

REVISIONS

7/13/2018 - PARCEL 62 - ADDED PARCEL NUMBER
PARCEL 62 - REVISED TCE STATION -SRII62- 15+46 TO 16+10

NAD 83

SITE 41

RO = 15200'
DS = 50 mph

DS = 50 mph

WALTER J. POYTHRESS

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

13

2

RIP RAP EA
STONE EA
EA

EXTEND EX. 3@9'X7' RCBC

E.T.M.

CL B RIP RAP
EST. 1 TON
EST. 5 SY. GF

US 70 24.5' BST

5.5' BST

4.5' BST

US 70 24.5' BST

15" RCP-III 2GI

-RP2AC- 15" RCP-III SEE DETAIL B 2GI

REMOVE SYSTEM

18" CONC

18" RCP-III

2GI-A SEE DETAIL B

90° RCP-III

-SRII62-

N 10° 18' 29" W

FILL IN WETLANDS

RETAIN

EXISTING R/W

SPEC. LATERAL 'V' DITCH
SEE DETAIL AAA

GRAVEL PARKING

SPECIAL LATERAL V DITCH
SEE DETAIL S

END CONSTRUCTION
END PAVING
-SRII62- STA.16+27.00

-SRII62- PT Sta. 18+58.37

-SRII62- POT Sta. 19+24.56

-RP2AC- CS Sta. 52+23.75

-RP2AC- SRS Sta. 54+68.75

JOHN TYLER JACKSON

F / F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

S / S DENOTES IMPACTS IN SURFACE WATER

TS / TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEETS 86 AND 87 FOR PROFILE -RP2AC-
SEE SHEETS 92 FOR PROFILE -SRII62-
SEE SHEETS 2D-1 THRU 2D-2 FOR FRAINAGE DITCH DETAILS

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

11/16/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh48.dgn

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	42+12 TO 54+15 -L- RT	ROADWAY FILL	0.57		0.33	0.26						
2	57+70 TO 76+06 -L- RT	ROADWAY FILL	2.68		1.65	0.73						
	0+00 TO 33+68 -RP1CD- RT											
3	70+94 TO 122+68 -L- RT/LT	ROADWAY FILL	25.91		0.32	3.10						
	22+61 TO 29+63 -RP1AB- LT											
4	127+97 TO 132+42 -L- LT/RT	ROADWAY FILL	1.53			0.09						
5	136+88 TO 140+23 -L- LT/RT	ROADWAY FILL	0.10		0.06	0.07	0.08					
6	138+19 TO 149+15 -L- LT/RT	ROADWAY FILL	5.17			0.37						
7	154+60 TO 163+94 -L- LT/RT	ROADWAY FILL	2.56			0.33						
8	167+89 TO 168+21 -L- LT/RT	ROADWAY FILL	0.02			< 0.01						
9	170+05 TO 197+19 -L- LT/RT	Dual Bridges; 12@ 135', 72" MBT	4.90			0.64	3.95					
10	197+45 TO 210+28 -L- LT/RT	ROADWAY FILL	6.69			0.55						
11	211+31 TO 218+97 -L- LT/RT	ROADWAY FILL	2.82			0.21						
12	218+39 TO 224+77 -L- LT/RT	ROADWAY FILL	2.46		< 0.01	0.16						
13	229+73 TO 238+69 -L- LT/RT	ROADWAY FILL	6.85			0.37						
14	7+87 TO 11+18 -Y3RPB- LT/RT	72" RCP, BURIED	0.83			0.16		0.05	< 0.01	337.9	56.1855	
15	12+60 TO 13+72 -Y3RPB- LT/RT	ROADWAY FILL	0.32			0.03						
16	237+79 TO 244+33 -L- LT/RT	72" RCP, BURRIED 1'	2.42			0.22		0.03	< 0.01	200.9	58.8936	
17	52+61 TO 53+18 -Y3DET- LT/RT	72" RCP, BURRIED 1'	0.04		0.01	0.01		0.03	0.02	129.7	88.99	
17A	52+61 TO 53+18 -Y3DET- LT/RT	60" TEMP PIPE		0.05			0.01					
18	20+55 TO 24+91 -Y3RPD- LT/RT	ROADWAY FILL	0.98		0.02	0.10						
18A	55+30 TO 57+16-Y3DET- LT/RT	TEMP DETOUR		0.15			0.03					
19	16+94 TO 17+92 -Y3RPD- LT/RT	84" RCP, BURIED 1'	0.09			0.05		0.06	< 0.01	261.2	44.1	
TOTALS*:			66.94	0.20	2.39	7.46	4.07	0.16	0.04	930	248	0

*Rounded totals are sum of actual impacts

NOTES:
Bridge Impacts at Site 9: 0.02 acres for Temporary Bents, <0.01 acres for all permanent bents.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
11/16/2018
CRAVEN COUNTY
R-1015
34360.1.2
SHEET 165 OF 167

Revised 2016 09 09

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
20	57+34 TO 62+48 -Y3- RT	ROADWAY FILL	1.46		0.10	0.18						
21	58+29 TO 63+51 -Y3- RT	ROADWAY FILL	0.55		0.22	0.08						
21A	58+89 TO 64+03Y3DET- LT/RT	TEMP DETOUR		0.25	0.11		0.12					
22	267+83 TO 273+90 -L- LT/RT	84" RCP, BURIED 1'	0.86			0.12		0.05	0.01	583.6	61.1099	
23	280+57 TO 293+27 -L- LT/RT	Dual Bridge; 7 @ 135', 72" MBT	1.03			0.15	3.05					
24	308+19 TO 314+60 -L- LT/RT	42" RCP	0.74		0.04	0.06						
25A	328+41 TO 336+80 -L- LT/RT	2@ 72" RCP, BURIED 1'	1.80		0.10	0.12						
25B	325+13 TO 325+48 -L- RT	ROADWAY FILL	< 0.01			< 0.01						
26	337+97 TO 342+81 -L- RT	72" RCP, BURRIED 1'	0.48		< 0.01	0.11						
27	340+63 TO 344+93 -L- LT	72" RCP, BURRIED 1'	0.79		0.05	0.07						
28A	348+96 TO 349+65 -L- RT	ROADWAY FILL	0.01			0.02						
28B	351+33 TO 352+19 -L- RT	ROADWAY FILL	< 0.01			0.02						
29	355+33 TO 357+51 -L- LT	ROADWAY FILL	0.03		0.07	0.04						
30	355+83 TO 357+47 -L- RT	ROADWAY FILL	0.27			0.04						
31	373+16 TO 380+23 -L- LT/RT	ROADWAY FILL	2.23		0.07	0.31						
32	392+99 TO 399+33 -L- LT/RT	ROADWAY FILL	0.56			0.15						
33	408+22 TO 408+87 -L- LT	ROADWAY FILL	< 0.01			0.01						
34	409+25 TO 409+75 -L- RT	ROADWAY FILL	0.18			< 0.01						
35A	432+62 TO 449+72 -L- LT/RT	ROADWAY FILL	5.49			0.77						
35B	450+94 TO 454+47 -L- LT/RT	ROADWAY FILL	0.71			0.11						
36A	456+65 TO 461+70 -L- LT/RT	84" RCP, BURIED 1'	0.79			0.15						
36B	462+57 TO 464+60 -L- LT/RT	ROADWAY FILL	0.50		0.02	0.05						
37	468+85 TO 486+94 -L- LT/RT	ROADWAY FILL	3.43		0.01	0.50						
SUB TOTALS THIS SHEET*:			21.93	0.25	0.79	3.07	3.17	0.05	0.01	584	61	0

*Rounded totals are sum of actual impacts

NOTES:
Bridge Impacts at Site 23: 0.04 acres for Temporary Bents, <0.01 acres for all permanent bents.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
11/16/2018
CRAVEN COUNTY
R-1015
34360.1.2
SHEET 166 OF 167

Revised 2016 09 09

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
38A	489+64 TO 493+80 -L- LT/RT	ROADWAY FILL	0.49			0.03						
38B	496+92 TO 498+23 -L- LT/RT	ROADWAY FILL	0.30			0.06						
39	507+39 TO 518+70 -L- LT/RT	2 @ 10'X8' RCBC	2.99		0.07	0.20		0.22	0.03	984.87	116.37	
40	RP2AC/RP2A/LP2A	ROADWAY FILL	5.38		0.12	0.78						
41	41+40 TO 47+97 -RP2AC- LT/RT	EXTEND 3@ 9'X7' RCBC	0.03			0.12		0.05	0.08	48.71	56.79	
42	34+08 TO 37+91 -Y4- LT	72" RCP, BURIED 1'	0.01		0.04	0.06		< 0.01	< 0.01	20.43	11.6	
43	33+80 TO 35+02 -Y4- RT	72" RCP, BURIED 1'	< 0.01		0.01	0.04		< 0.01	< 0.01	41.75	10.35	
44	51+17 TO 53+70 -Y4- LT	2 @ 84" RCP, BURIED1'	0.24		0.02	0.09		0.02	< 0.01	121.5	10.7	
45	50+49 TO 57+08 -Y4DET- LT/RT	2 @ 84" RCP, BURIED1'	0.35			0.12		0.04	0.02	116.4	98.9	
45A	50+47 TO 57+03 -Y4DET-	TEMP DETOUR		0.51			0.19					
46	533+11 -L- RT	30" RCP						< 0.01	< 0.01	10.0	16.0	
47	563+36 -L- RT	36" RCP						< 0.01	< 0.01	12.0	10.0	
SUB TOTAL THIS SHEET:			9.79	0.51	0.27	1.50	0.19	0.34	0.14	1356	331	
SUB TOTAL SHEET 1:			66.94	0.20	2.39	7.46	4.07	0.16	0.04	930	248	
SUB TOTAL SHEET 2:			21.93	0.25	0.79	3.07	3.17	0.05	0.01	584	61	
TOTALS*:			98.66	0.96	3.45	12.03	7.43	0.55	0.19	2869	640	0

*Rounded totals are sum of actual impacts

NOTES:
At Site 45/45A, 0.03 acre of Temporary Fill in Wetlands in the Hand Clearing area for erosion control measures.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
11/16/2018
CRAVEN COUNTY
R-1015
34360.1.2
SHEET 167 OF 167

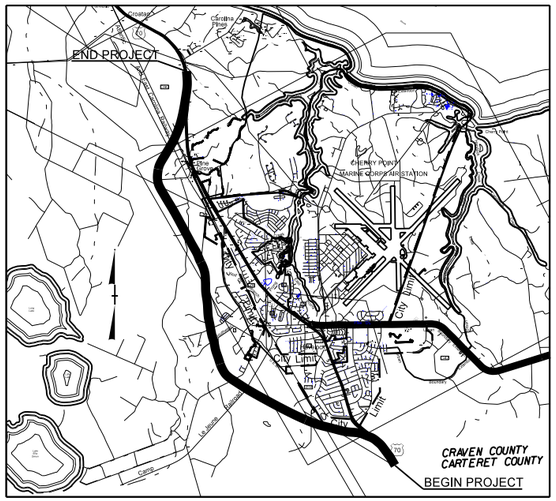
Revised 2016 09 09

8/2/2018 09:30:50
begendorf
$$$$USERNAME$$$$
$$$$TIME$$$$
$$$$FILENAME$$$$
C:\Projects\R1015_HYD_prm_buf_TSH.dgn

CONTRACT:

TIP PROJECT: R-1015

See Sheet 1A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CRAVEN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-1015	1	

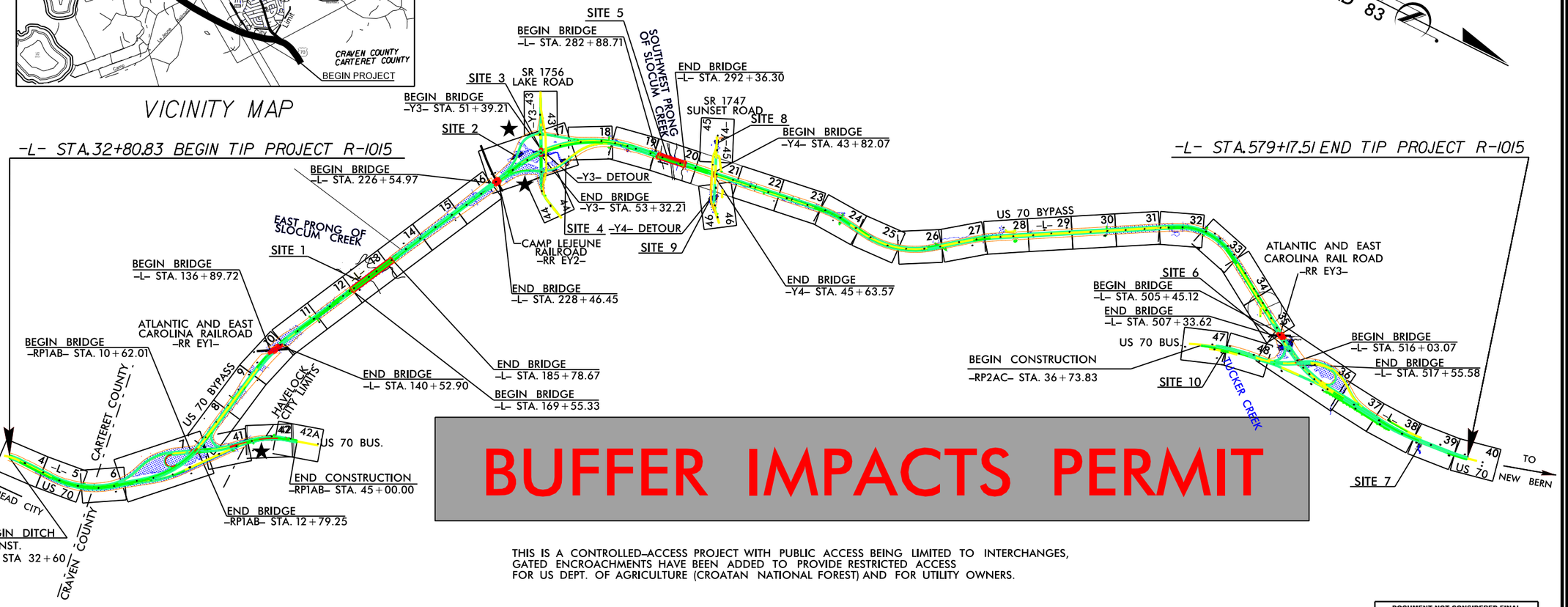
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34360.1.2	NHF-70(49)	PE
34360.1.2	NHF-70(49)	RW
34360.1.2	NHF-70(49)	UTIL
34360.1.2	NHF-70(49)	CONST

LOCATION: US 70 (HAVELOCK BYPASS) FROM SOUTH OF CARTERET /CRAVEN COUNTY LINE TO SOUTH OF SR 1176, (CAROLINA PINES BLVD.)

BUFFER DRAWING SHEET 1 OF 20

TYPE OF WORK: GRADING, DRAINAGE, PAVING, WIDENING, CULVERTS SIGNING, SIGNALS AND STRUCTURES

NAD 83



★ SIGNAL LOCATION

BUFFER IMPACTS PERMIT

THIS IS A CONTROLLED-ACCESS PROJECT WITH PUBLIC ACCESS BEING LIMITED TO INTERCHANGES, GATED ENCROACHMENTS HAVE BEEN ADDED TO PROVIDE RESTRICTED ACCESS FOR US DEPT. OF AGRICULTURE (CROATAN NATIONAL FOREST) AND FOR UTILITY OWNERS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS 50 25 0 50 100

PROFILE (HORIZONTAL) 50 25 0 50 100

PROFILE (VERTICAL) 10 5 0 10 20

DESIGN DATA

ADT 2015 = N/A
ADT 2035 = 22,900
K = 9 %
D = 60 %
T = 7 % *
V = 70 MPH
* TTST 3% DUAL 3%
FUNC. CLASS = FREEWAY (FUTURE INTERSTATE)

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R-1015 = 9.691 MILES
LENGTH OF STRUCTURE TIP PROJECT R-1015 = 0.657 MILES
TOTAL LENGTH OF TIP PROJECT R-1015 = 10.348 MILES

Prepared for NCDOT In the Office of:
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX (F-0105)

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 16, 2016

LETTING DATE: FEBRUARY 19, 2019

TIM REID, PE
PROJECT ENGINEER

TRENT HUFFMAN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

moffatt & nichol

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

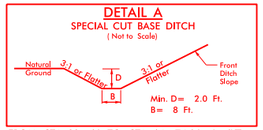
Details

PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

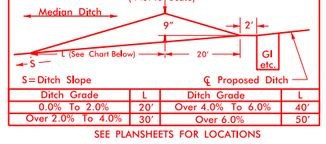
BUFFER DRAWING SHEET _2_ OF _20_

DETAIL A
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM STA. 32+60 TO STA. 64+74.20 –L– (LT)
FROM STA. 0+00 TO STA. 7+00 –RP1B– (LT)
FROM STA. 10+75 TO STA. 29+00 –RP1CD– (LT)

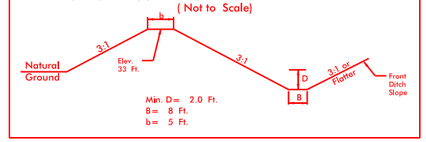
DETAIL B
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

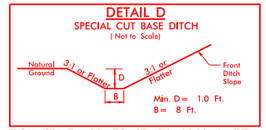
SEE PLANSHEETS FOR LOCATIONS

DETAIL C
SPECIAL CUT DITCH W/EARTHEN BERM
(Not to Scale)



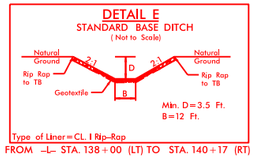
FROM STA. 79+50 TO STA. 86+87 –L– (LT)

DETAIL D
SPECIAL CUT BASE DITCH
(Not to Scale)



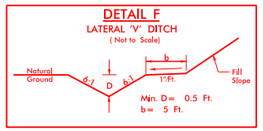
FROM STA. 74+26 TO STA. 76+06.30 –L– (RT)
FROM STA. 0+00 TO STA. 7+50 –RP1CD– (RT)
FROM STA. 330+40 TO STA. 336+35 –L– (LT)
FROM STA. 330+17 TO STA. 335+00 –L– (RT)
FROM STA. 356+50 TO STA. 361+50 –L– (LT)

DETAIL E
STANDARD BASE DITCH
(Not to Scale)



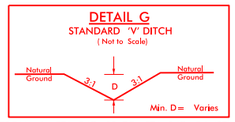
FROM –L– STA. 138+00 (LT) TO STA. 140+17 (RT)

DETAIL F
LATERAL 'V' DITCH
(Not to Scale)



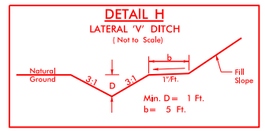
FROM –L– STA. 150+50 TO STA. 154+76 (RT)

DETAIL G
STANDARD 'V' DITCH
(Not to Scale)



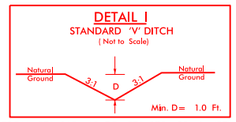
FROM –L– STA. 247+15 TO STA. 247+24 (RT)

DETAIL H
LATERAL 'V' DITCH
(Not to Scale)



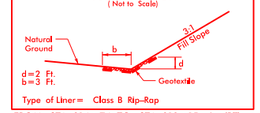
FROM STA. 165+23 TO STA. 169+60 –L– (RT)
FROM STA. 219+40 TO STA. 223+55 –L– (LT)
FROM STA. 363+57 TO STA. 364+30 –L– (RT)

DETAIL I
STANDARD 'V' DITCH
(Not to Scale)



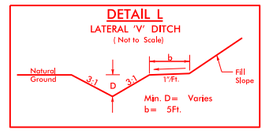
FROM STA. 169+60 TO STA. 170+50 –L– (RT)
FROM STA. 550+75 (–213') TO STA. 551+46 (–182') –L– (LT)

DETAIL J
TOE PROTECTION
(Not to Scale)



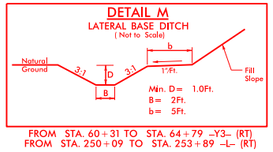
FROM STA. 214+74 TO STA. 218+15 –L– (RT)
FROM STA. 16+60 TO STA. 19+49 –Y3RPB– (LT)
FROM STA. 271+00 TO STA. 273+10 –L– (RT)
FROM STA. 292+34 TO STA. 293+00 –L– (LT)
FROM STA. 470+00 TO STA. 471+20 –L– (LT)
FROM STA. 470+00 TO STA. 471+00 –L– (RT)

DETAIL L
LATERAL 'V' DITCH
(Not to Scale)



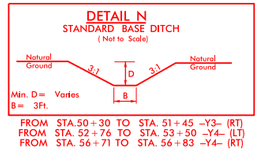
FROM STA. 13+31 TO STA. 16+56 –Y3RPB– (LT)
FROM STA. 267+67 TO STA. 271+88 –L– (RT)

DETAIL M
LATERAL BASE DITCH
(Not to Scale)



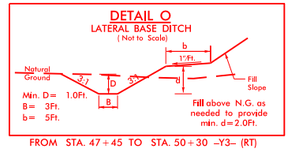
FROM STA. 60+31 TO STA. 64+79 –Y3– (RT)
FROM STA. 250+09 TO STA. 253+89 –L– (RT)

DETAIL N
STANDARD BASE DITCH
(Not to Scale)



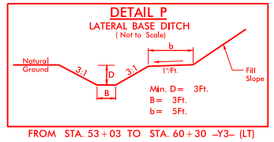
FROM STA.50+30 TO STA. 51+45 –Y3– (RT)
FROM STA. 52+76 TO STA. 53+50 –Y4– (LT)
FROM STA. 56+71 TO STA. 56+83 –Y4– (RT)

DETAIL O
LATERAL BASE DITCH
(Not to Scale)



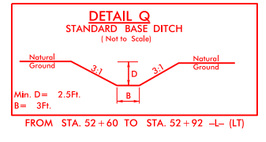
FROM STA. 47+45 TO STA. 50+30 –Y3– (RT)

DETAIL P
LATERAL BASE DITCH
(Not to Scale)



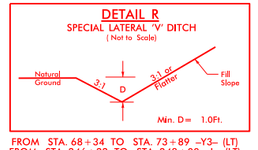
FROM STA. 53+03 TO STA. 60+30 –Y3– (LT)

DETAIL Q
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 52+60 TO STA. 52+92 –L– (LT)

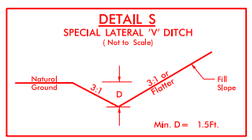
DETAIL R
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 68+34 TO STA. 73+89 –Y3– (LT)
FROM STA. 246+22 TO STA. 248+00 –L– (LT)
FROM STA. 58+00 TO STA. 59+25 –Y4– (RT)
FROM STA. 469+33 TO STA. 470+27 –L– (LT)
FROM STA. 529+15 TO STA. 530+50 –L– (LT)
FROM STA. 531+50 TO STA. 533+55 –L– (LT)
FROM STA. 526+50 TO STA. 530+14 –L– (RT)
FROM STA. 32+80.84 TO STA. 33+38 –SERVRD– (RT)
FROM STA. 35+17 TO STA. 37+10 –SERVRD– (RT)
FROM STA. 91+56 TO STA. 92+95 –RP2A– (LT)
FROM STA. 42+50 TO STA. 48+90 –SERVRD– (RT)
FROM STA. 53+92 TO STA. 56+47 –SERVRD– (RT)
FROM STA. 558+00 TO STA. 559+00 –L– (LT)
FROM STA. 10+25 TO STA. 14+50 –SERVEXT– (LT)
FROM STA. 53+92 TO STA. 56+47 –SERVRD– (RT)
FROM STA. 552+25 TO STA. 556+50 –L– (LT)
FROM STA. 16+00 TO STA. 17+80 –SERVEXT– (LT)

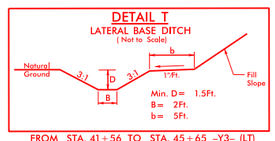
BUFFER IMPACTS PERMIT

DETAIL S
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



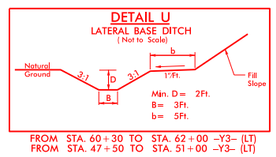
FROM STA. 65+16 TO STA. 73+89 –Y3– (RT)
FROM STA. 65+00 TO STA. 67+86 –Y3– (LT)
FROM STA. 63+00 TO STA. 65+86 –RP2AC– (RT)
FROM STA. 53+50 TO STA. 58+30 –RP2AC– (RT)
FROM STA. 37+45 TO STA. 42+50 –SERVRD– (RT)
FROM STA. 48+90 TO STA. 53+92 –SERVRD– (RT)

DETAIL T
LATERAL BASE DITCH
(Not to Scale)



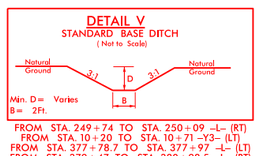
FROM STA. 41+56 TO STA. 45+65 –Y3– (LT)
FROM STA. 37+00 TO STA. 43+34 –Y4– (LT)
FROM STA. 38+00 TO STA. 43+50 –Y4– (RT)
FROM STA. 10+52 TO STA. 12+00 –Y4DR– (LT)
FROM STA. 45+26 TO STA. 49+73 –Y4– (RT)
FROM STA. 48+30 TO STA. 49+74 –Y4– (RT)

DETAIL U
LATERAL BASE DITCH
(Not to Scale)



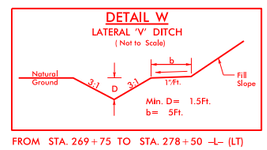
FROM STA. 60+30 TO STA. 62+00 –Y3– (LT)
FROM STA. 47+50 TO STA. 51+00 –Y3– (LT)

DETAIL V
STANDARD BASE DITCH
(Not to Scale)



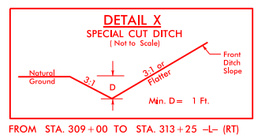
FROM STA. 249+74 TO STA. 250+09 –L– (RT)
FROM STA. 10+20 TO STA. 10+71 –Y3– (LT)
FROM STA. 377+78.7 TO STA. 377+97 –L– (LT)
FROM STA. 379+47 TO STA. 380+98.5 –L– (RT)

DETAIL W
LATERAL 'V' DITCH
(Not to Scale)



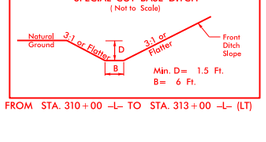
FROM STA. 269+75 TO STA. 278+50 –L– (LT)

DETAIL X
SPECIAL CUT DITCH
(Not to Scale)



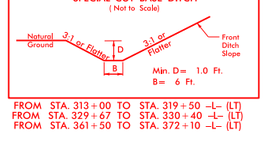
FROM STA. 309+00 TO STA. 313+25 –L– (RT)

DETAIL Y
SPECIAL CUT BASE DITCH
(Not to Scale)



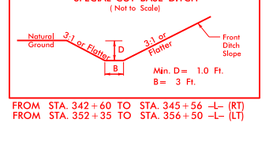
FROM STA. 310+00 –L– TO STA. 313+00 –L– (LT)

DETAIL Z
SPECIAL CUT BASE DITCH
(Not to Scale)



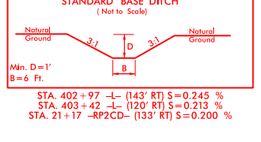
FROM STA. 313+00 TO STA. 319+50 –L– (LT)
FROM STA. 329+67 TO STA. 330+40 –L– (LT)
FROM STA. 361+50 TO STA. 372+10 –L– (LT)

DETAIL AA
SPECIAL CUT BASE DITCH
(Not to Scale)



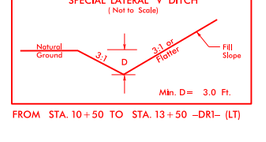
FROM STA. 342+60 TO STA. 345+56 –L– (RT)
FROM STA. 352+35 TO STA. 356+50 –L– (RT)

DETAIL BB
STANDARD BASE DITCH
(Not to Scale)



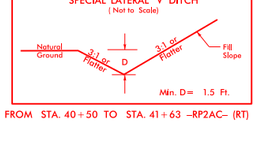
STA. 402+97 –L– (143' RT) S=0.245 %
STA. 403+42 –L– (120' RT) S=0.213 %
STA. 21+17 –RP2CD– (133' RT) S=0.200 %

DETAIL CC
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



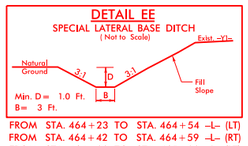
FROM STA. 10+50 TO STA. 13+50 –DR1– (LT)

DETAIL DD
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



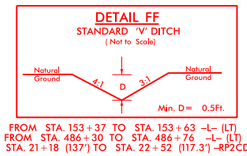
FROM STA. 40+50 TO STA. 41+63 –RP2AC– (RT)

DETAIL EE
SPECIAL LATERAL BASE DITCH
(Not to Scale)



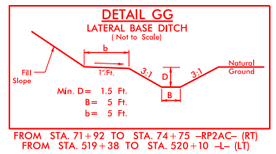
FROM STA. 464+23 TO STA. 464+54 –L– (LT)
FROM STA. 464+42 TO STA. 464+59 –L– (RT)
FROM STA. 464+83 TO STA. 465+29 –L– (LT)
FROM STA. 464+90 TO STA. 465+15 –L– (RT)

DETAIL FF
STANDARD 'V' DITCH
(Not to Scale)



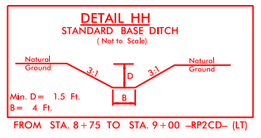
FROM STA. 153+37 TO STA. 153+63 –L– (LT)
FROM STA. 486+30 TO STA. 486+76 –L– (LT)
FROM STA. 21+18 (137') TO STA. 22+52 (117.3') –RP2CD– (RT)

DETAIL GG
LATERAL BASE DITCH
(Not to Scale)



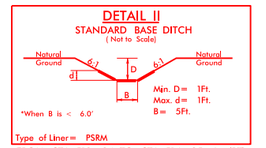
FROM STA. 71+92 TO STA. 74+75 –RP2AC– (RT)
FROM STA. 519+38 TO STA. 520+10 –L– (LT)

DETAIL HH
STANDARD BASE DITCH
(Not to Scale)



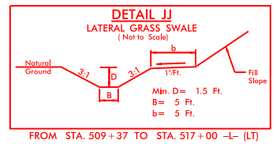
FROM STA. 8+75 TO STA. 9+00 –RP2CD– (LT)

DETAIL II
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 512+94 TO STA. 514+35 –L– (RT)

DETAIL JJ
LATERAL GRASS SWALE
(Not to Scale)



FROM STA. 509+37 TO STA. 517+00 –L– (LT)

REVISIONS

8/17/99

11/16/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Buffer\r-1015_Hyd_PRM_BUF_details.dgn

$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$

8/17/99

REVISIONS

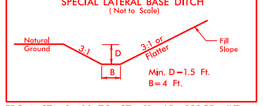
PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

BUFFER DRAWING SHEET _3_ OF _20_

Details (cont.)

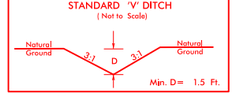
DETAIL KK
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D=1.5 Ft.
B=4 Ft.

FROM STA. 9+00 TO STA. 11+65 –RP2CD– (LT)
FROM STA. 563+25 TO STA. 565+50 –L– (LT)

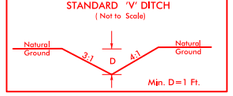
DETAIL LL
STANDARD 'V' DITCH
(Not to Scale)



Min. D= 1.5 Ft.

STA. 90+41 –RP2A– (LT)
FROM STA. 12+15 TO STA. 12+89 –RP2CD– (RT)
FROM STA. 534+65 TO STA. 535+02 –L– (LT)
FROM STA. 536+53 TO STA. 536+74 –L– (LT)
FROM STA. 536+83 TO STA. 537+43 –L– (LT)

DETAIL MM
STANDARD 'V' DITCH
(Not to Scale)



Min. D=1 Ft.

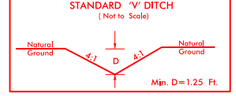
STA. 11+66 to 12+05 –RP2CD– (LT)

DETAIL NN
MEDIAN 'V' DITCH
(Not to Scale)

MIN D=1.0'

FROM STA. 162+00 TO STA. 167+00 –L– (MED)
FROM STA. 224+00 TO STA. 226+26 –L– (MED)
FROM STA. 434+50 TO STA. 450+50 –L– (MED)
FROM STA. 530+14 TO STA. 536+00 –L– (RT)
FROM STA. 537+00 TO STA. 579+00 –L– (RT)
FROM STA. 555+00 TO STA. 559+50 –L– (MED)
FROM STA. 566+47 TO STA. 575+00 –L– (MED)
FROM STA. 575+00 TO STA. 579+17.51 –L– (MED)

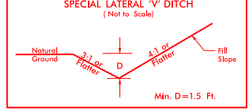
DETAIL OO
STANDARD 'V' DITCH
(Not to Scale)



Min. D=1.25 Ft.

STA. 533+55 –L– (LT) S=6.8 %

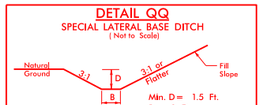
DETAIL PP
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.

FROM STA. 559+00 TO STA. 562+50 –L– (LT)

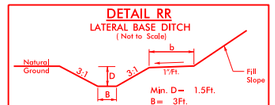
DETAIL QQ
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
B= 2 Ft.

FROM STA. 544+00 TO STA. 552+25 –L– (LT)
FROM STA. 562+50 TO STA. 563+25 –L– (LT)

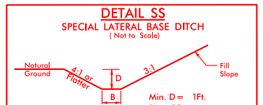
DETAIL RR
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5Ft.
B= 3Ft.
b= 5Ft.

FROM STA. 53+50 TO STA. 54+50 –Y4– (LT)
STA. 11+00 –SERVEXT– S=0.286 %

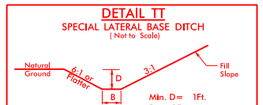
DETAIL SS
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 1Ft.
B= 2Ft.

FROM STA. 34+57 TO STA. 41+17 –Y3– (LT)
FROM STA. 543+00 TO STA. 544+00 –L– (LT)

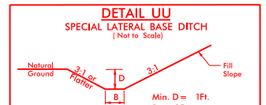
DETAIL TT
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 1Ft.
B= 3Ft.

FROM STA. 34+57 TO STA. 37+79 –Y3– (RT)

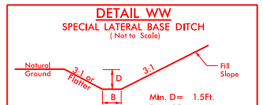
DETAIL UU
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 1Ft.
B= 3Ft.

FROM STA. 38+60 TO STA. 41+50 –Y3– (RT)

DETAIL WW
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5Ft.
B= 2Ft.

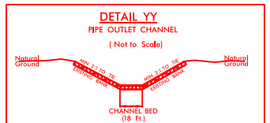
FROM STA. 34+23 TO STA. 37+00 –Y4– (LT)
FROM STA. 34+47 TO STA. 38+00 –Y4– (RT)
FROM STA. 12+00 TO STA. 15+70 –Y4DR– (LT)
FROM STA. 12+00 TO STA. 15+70 –Y4DR– (LT)

DETAIL XX
PIPE INLET CHANNEL AND BANK STABILIZATION
(Not to Scale)

Length= 25Ft.
Est.= 20 Tons of Class I Rip-Rap

STA. 51+65 –Y4– (LT)

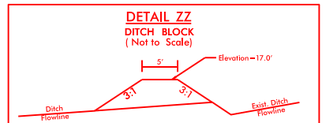
DETAIL YY
PIPE OUTLET CHANNEL
(Not to Scale)



Length= 30Ft.
Est.= 100 Tons of Class I Rip-Rap

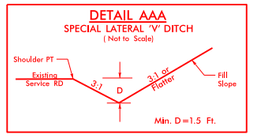
STA. 52+38 –Y4– (RT)

DETAIL ZZ
DITCH BLOCK
(Not to Scale)



STA. 58+77 –Y4– (LT)

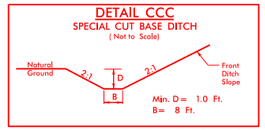
DETAIL AAA
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.

FROM STA. 38+50 TO STA. 42+50 –RP2AC– (RT)

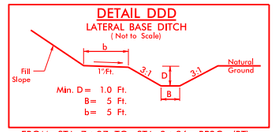
DETAIL CCC
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 8 Ft.

FROM STA. 341+50 –L– TO STA. 347+63 –L– (LT)

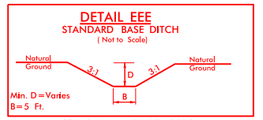
DETAIL DDD
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 5 Ft.
b= 5 Ft.

FROM STA. 7+27 TO STA. 8+36 –RP2C– (RT)

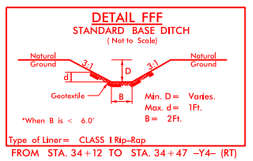
DETAIL EEE
STANDARD BASE DITCH
(Not to Scale)



Min. D=Varies
B=5 Ft.

STA. 6+14 to 7+27 –RP2C–
STA. 72+02 to 72+50 –RP2AC– (RT)

DETAIL FFF
STANDARD BASE DITCH
(Not to Scale)

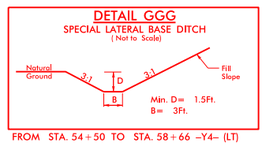


Min. D= Varies.
Max. d= 1Ft.
B= 2Ft.
*When B is < 6.0'

Type of Liner= CLASS I Rip-Rap

FROM STA. 34+12 TO STA. 34+47 –Y4– (RT)

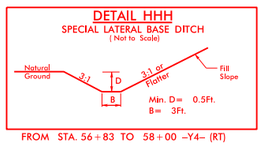
DETAIL GGG
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5Ft.
B= 3Ft.

FROM STA. 54+50 TO STA. 58+66 –Y4– (LT)

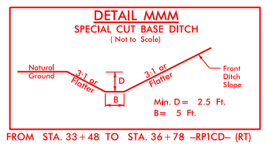
DETAIL HHH
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 0.5Ft.
B= 3Ft.

FROM STA. 56+83 TO 58+00 –Y4– (RT)

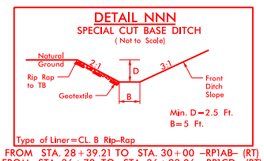
DETAIL MMM
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 2.5 Ft.
B= 5 Ft.

FROM STA. 33+48 TO STA. 36+78 –RP1CD– (RT)

DETAIL NNN
SPECIAL CUT BASE DITCH
(Not to Scale)

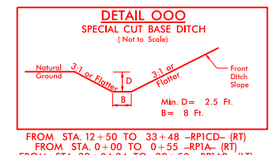


Min. D=2.5 Ft.
B=5 Ft.

Type of Liner=CL. B Rip-Rap

FROM STA. 28+39.21 TO STA. 30+00 –RP1AB– (RT)
FROM STA. 36+78 TO STA. 36+93.06 –RP1CD– (RT)

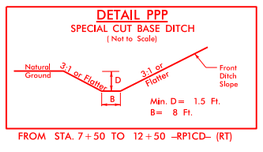
DETAIL OOO
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 2.5 Ft.
B= 8 Ft.

FROM STA. 12+50 TO 33+48 –RP1CD– (RT)
FROM STA. 0+00 TO 0+55 –RP1A– (RT)
FROM STA. 22+04.84 TO 28+50 –RP1AB– (LT)

DETAIL PPP
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
B= 8 Ft.

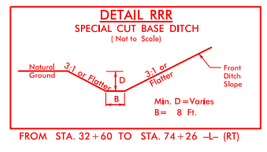
FROM STA. 7+50 TO 12+50 –RP1CD– (RT)

DETAIL QQQ
MEDIAN 'V' DITCH
(Not to Scale)

MIN D=1.0 Ft

–RP1AB– FROM STA. 20+50 TO STA. 22+70 –RP1AB– (MED)

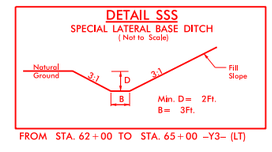
DETAIL RRR
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D=Varies
B= 8 Ft.

FROM STA. 32+60 TO STA. 74+26 –L– (RT)

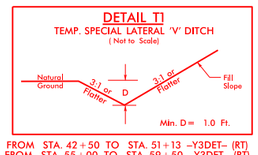
DETAIL SSS
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 2Ft.
B= 3Ft.

FROM STA. 62+00 TO STA. 65+00 –Y3– (LT)

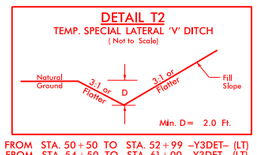
DETAIL T1
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.0 Ft.

FROM STA. 42+50 TO STA. 51+13 –Y3DET– (RT)
FROM STA. 55+00 TO STA. 59+50 –Y3DET– (RT)
FROM STA. 38+25 TO STA. 40+25 –Y4DET– (LT)
FROM STA. 54+00 TO STA. 55+00 –Y4DET– (LT)

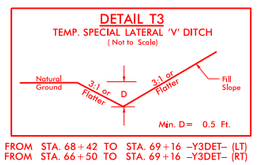
DETAIL T2
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 2.0 Ft.

FROM STA. 50+50 TO STA. 52+99 –Y3DET– (LT)
FROM STA. 54+50 TO STA. 61+00 –Y3DET– (LT)
FROM STA. 34+52 TO STA. 38+78 –Y4DET– (RT)

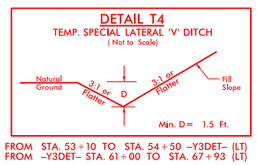
DETAIL T3
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 0.5 Ft.

FROM STA. 68+42 TO STA. 69+16 –Y3DET– (LT)
FROM STA. 66+50 TO STA. 69+16 –Y3DET– (RT)

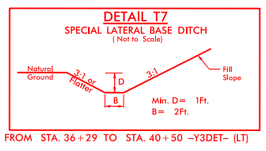
DETAIL T4
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.5 Ft.

FROM STA. 53+10 TO STA. 54+50 –Y3DET– (LT)
FROM –Y3DET– STA. 61+00 TO STA. 67+93 (LT)

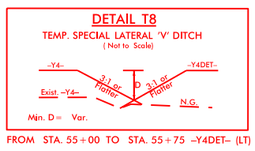
DETAIL T7
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 1Ft.
B= 2Ft.

FROM STA. 36+29 TO STA. 40+50 –Y3DET– (LT)

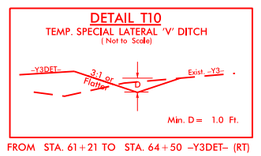
DETAIL T8
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= Var.

FROM STA. 55+00 TO STA. 55+75 –Y4DET– (LT)

DETAIL T10
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.0 Ft.

FROM STA. 61+21 TO STA. 64+50 –Y3DET– (RT)

BUFFER IMPACTS PERMIT

11/16/2018
mmoore
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$$$$$$$$SYSTIME$$$$$
$$$$$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DETAIL FOR –Y3– DETOUR

SITE 3

BUFFER DRAWING SHEET 4 OF 20

2X

WEYERHAEUSER COMPANY

4

-Y3DET- PC Sta. 45+62.58

-Y3DET- PC Sta. 56+66.69

Sta. 48+06.44

NAD 83

Q10 = 15.4 CFS
V10 = 3.6 FPS

Q10 = 21.4 CFS
V10 = 2.12 FPS

BZ 2 | BZ 1 | JS | 60" TEMP | BZ 1 | BZ 2

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T2

REMOVE AFTER DETOUR

201

24" TEMP.

N 60°47' 21"E

202

60" TEMP.

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T4

203

24" TEMP.

REMOVE AFTER DETOUR

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T1

WOODS

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T1

MATCHLINE SHEET 2B-1 -Y3DET- STA 45+00.00

MATCHLINE SHEET 2B-3 -Y3DET- STA 59+00.00

LAKE ROAD SR 1756 (19.5' BST)

EXIST R/W

60.00'

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

WOODS

WEYERHAEUSER COMPANY

4

100' 0' 100'

GRAPHIC SCALE

IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN IN GRAY FOR REFERENCE PURPOSES. SEE PSH 17 (BUFFER DRAWING SHEET 9 OF 20) FOR PERMANENT ALIGNMENT IMPACTS.

SEE SHEETS 9B-1 THRU 9B-2 FOR DRAINAGE DITCH DETAILS

-Y3- DET

DITCH LEGEND	
MEDIAN DITCH	— — — —
LEFT DITCH	— · — · —
RIGHT DITCH	- - - - - -

PI = 47+50.00
EL = 30.20'
K = 190
VC = 120'

(+)0.3063%
(-)0.3256%
(-)0.1237%

TEMP. 24"
-Y3DET- STA. 50+50 ELEV. = 23.18'

+50.00 RT 23.31'

BEGIN DITCH 45+50.00 LT 23.06'

(+)4.365%
(-)0.8400%

END DITCH 49+00.00 RT 24.17'

+50.00' LT 22.22'

(-)1.5705%

END DITCH 49+99.00 LT 19.88'

TEMP. 60"
-Y3DET- STA. 53+08 ELEV. = 18.28'

BEGIN DITCH 50+00.00 LT 19.32'

(+)0.3000%

+00.00 LT 19.89'

(+)0.1000%

BEGIN DITCH 50+00.00 RT 22.00'

(+)0.1000%

TEMP. 24"
-Y3DET- STA. 55+00 ELEV. = 20.96'

70 60 50 40 30 20 10 0

45 46 47 48 49 50 51 52 53 54 55 56 57 58 59

11/6/2018
mbowman
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$$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BUFFER DRAWING SHEET 5 OF 20

DETAIL FOR -Y4- DETOUR

SITE 9

UNITED STATES AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

-Y4DET- PC Sta. 52+05.93

-Y4DET- PT Sta. 40+66.57

MATCHLINE SHEET 2B-5 -Y4DET- STA 40+00.00

MATCHLINE SHEET 2B-6 -Y4DET- STA 54+00.00

IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN IN GRAY FOR REFERENCE PURPOSES. SEE PSH 46 (BUFFER DRAWING SHEET 15 OF 20) FOR PERMANENT ALIGNMENT IMPACTS.

GRAPHIC SCALE 100' 0' 100' 200' 300'

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

-Y4- DET

PI = 41+00.00
EL = 27.50'
K = 198
VC = 80'

PI = 48+40.80
EL = 32.95'
K = 31
VC = 170

PI = 52+60.00
EL = 15.20'
K = 49
VC = 300'

(+)0.5238% (+)0.5182% (+)1.0723% (+)1.0723% (-)4.6786% (-)4.6786% (+)11.4164%

TEMP. 18"
-Y4DET- STA. 54+00 ELEV. = 11.38

TEMP. 84"
-Y4DET- STA. 52+57 ELEV. = 6.52'

DITCH LEGEND
MEDIAN DITCH
LEFT DITCH
RIGHT DITCH

8/2/2018
beanderson
R:\Hydraulics\PERMITS_Environmental\Drawings\Buffer\r-1015_Hyd_prm_buf_PSH2B-5.dgn
$$$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$LEVELNAME$$$$
$$$$$$$$$$DGN$$$$$$$$$$

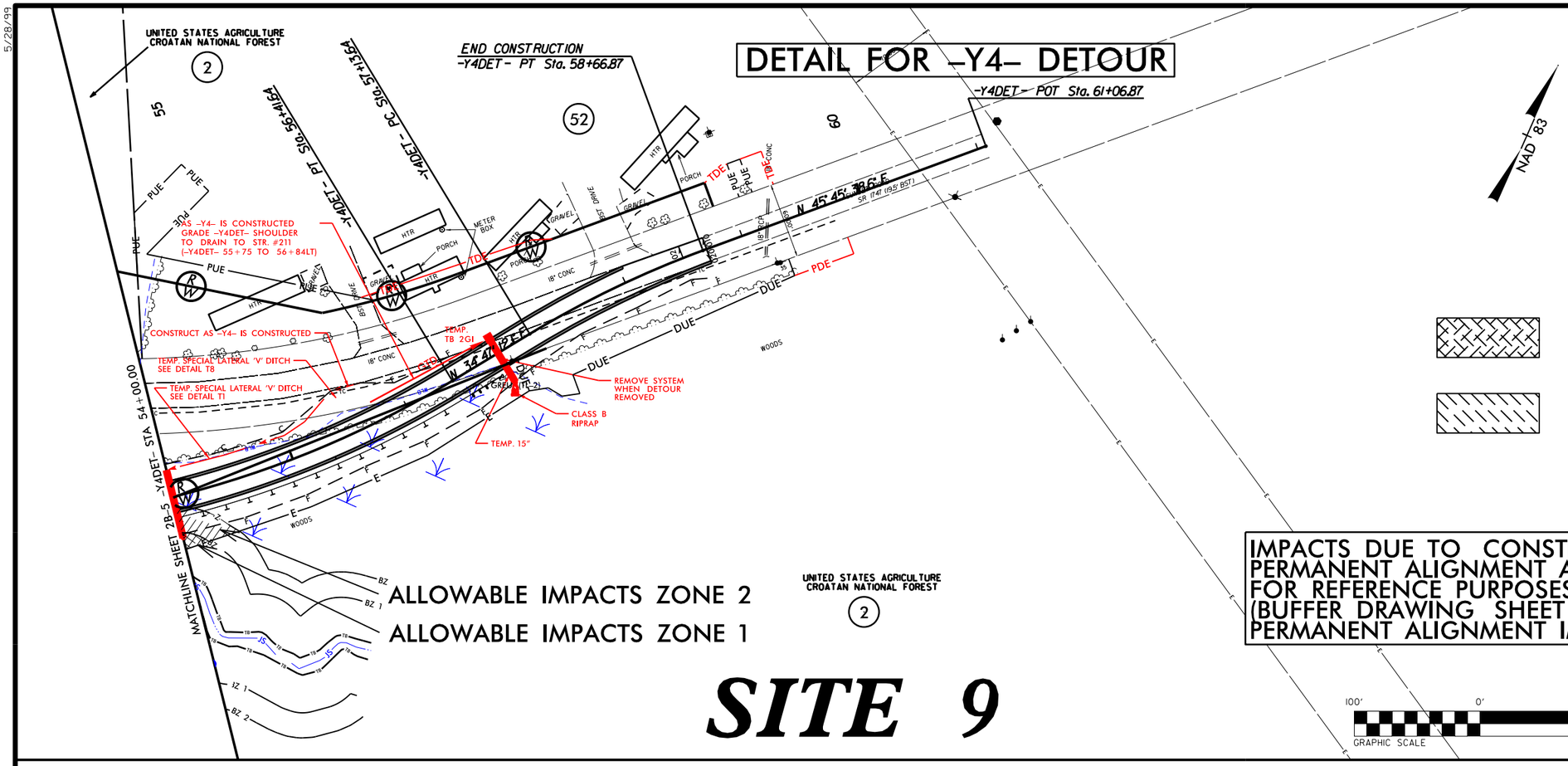
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

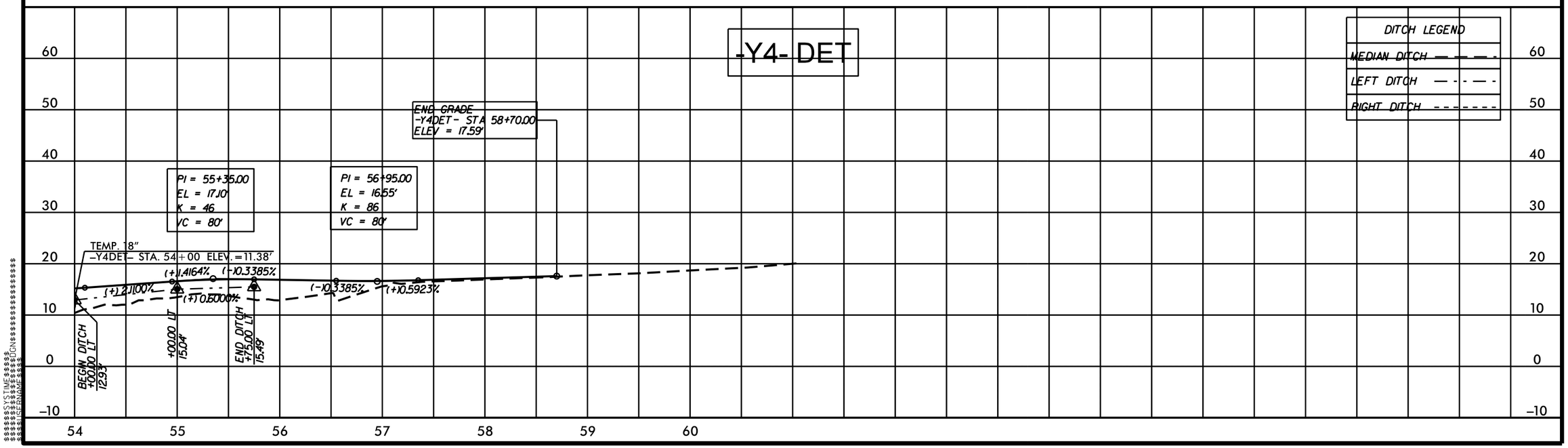
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 6 OF 20

DETAIL FOR -Y4- DETOUR



SITE 9



8/2/2018
beanderson
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$$$$$$$$SYSTIME$$$$$$
$$$$$$$$DGN$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BUFFER DRAWING SHEET 7 OF 20

8/17/99

REVISIONS

7/13/2018 - PARCEL 2 - ADDED TDE STATION -L- 165+40 TO 170+00 RT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

160

165

SITE 1

ZONE 2 ALLOWABLE

MATCH LINE STA.156+00 SEE SHEET 11

MATCH LINE STA. 170+00 SEE SHEET 13

-L-

N 63° 29' 33.7" W

WOODS

GREU (TL-3)

CAT-1 8:1

8:1

2GI

TB 2GI

TYPE B-77

36" RCP-IV EQUALIZER

15" RCP-IV

16" RCP-IV

18" RCP-IV

15" CAAP W/ELBOWS

18" CAAP W/ELBOWS

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL B RIP RAP EST. 3 TONS EST. 10 SY GF

PDE

TDE

MEDIAN 'V' DITCH SEE DETAIL NN

LATERAL 'V' DITCH SEE DETAIL H

STANDARD 'V' DITCH SEE DETAIL I
SS=0.003 FT/FT
DDE= 68 CY

POWERLINE EASEMENT

ALLOWABLE IMPACTS ZONE 2

WORK BRIDGE

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEET 54 FOR PROFILE -L-

7/31/2018
mgberry
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$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING SHEET 8 OF 20

8/17/99

REVISIONS

7/13/2018 - PARCEL 2 - ADDED TDE STATION -L- 170+00 TO 170+55 RT

SITE 1

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

DAVID T. ROWE, et ux
JAMES M. STALLINGS, et ux
3

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NAD 83

170 175 180

MATCH LINE STA.170+00 SEE SHEET 12

MATCH LINE STA.184+00 SEE SHEET 14

SITE 1
TEMP. WORK BRIDGE

-L- N 63°29'33.7" W

END VIN FENCE

EAST BRANCH OF SLOCUM CREEK

TIE PROP. DITCH TO NATURAL GROUND

TDE

STANDARD 'V' DITCH
SEE DETAIL 1
SS=0.003 FT/FT
DDE= 68 CY

WOODS

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

DAVID T. ROWE, et ux
JAMES M. STALLINGS, et ux

WORK BRIDGE

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEETS 55 FOR PROFILE -L-

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$

7/31/2018
mgberry
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REVISIONS

6/13/2018 -
PARCEL 4 - REVISED TCE STATION -Y3- 59+02 TO 61+00 LT
PARCEL 4 - ADDED TCE STATION -Y3RPD- 13+50 TO 16+67 LT
PARCEL 4 - CHANGED TCE TO PSE AND
REVISED AREA STATION -Y3RPD- 16+67 TO 17+67 LT
PARCEL 4 - ADDED TCE STATION -Y3RPD- 17+67 TO 20+23 LT
PARCEL 4 - ADDED TCE STATION -Y3RPA- 13+45 TO 15+88 RT
PARCEL 4 - ADDED PDE STATION -Y3RPA- 15+48 TO 15+87 RT
PARCEL 4 - ADDED TCE STATION -Y3RPA- 15+87 RT
TO -Y3- 45+00 LT
PARCEL 4 - ADDED TCE STATION -Y3RPD- 18+62 LT
TO -Y3- 45+08 RT

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

ONLY IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN ON THIS SHEET. FOR ADDITIONAL IMPACTS DUE TO DETOUR SEE PSH 2B-2 (PERMIT DRAWING SHEET 4 OF 20).

NAD 83

MATCH LINE -Y3- STA. 45+00 SEE SHEET 43

SEE ENLARGEMENT SHT 5

SITE 2

SITE 3

SITE 4

MATCH LINE STA.226+00 SEE SHEET 16

MATCH LINE -Y3- STA. 61+00 SEE SHEET 44

MATCH LINE -Y3RPA- STA. 8+50 SEE SHEET 18

MATCH LINE -Y3RPD- STA. 14+00 SEE SHEET 18

MATCH LINE STA.254+00 SEE SHEET 18

-Y3- STA. 52+60 TO 52+92 LT

-Y- STA. 52+05 TO 57+13 LT

GRASS SWALE DATA
DA= 8 Dac.
SLOPE= 0.003437 FT/FT
L REQ.= 980'
L PRO.= 970'
Q2= 39 cfs
V2= 2.1 fps
D2= 2.0'
Q10= 44 cfs
V10= 2.2 fps
D10= 2.3'

GRASS SWALE DATA
DA= 13.9 ac
SLOPE= 0.001 FT/FT
L REQ.= 1390'
L PRO.= 1725'
Q2= 1.5 fps
V2= 3.2'
D2= 69 cfs
Q10= 1.6 fps
D10= 3.4'

BUFFER DRAWING SHEET 9 OF 20

PROJECT REFERENCE NO. R-1015
SHEET NO. 17
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

GRAPHIC SCALE 50 25 0 50 100 FEET

GRAPHIC SCALE 100' 0' 100' 200' 300'

LOCATION: US 70 (HAVELOCK BYPASS) FROM SOUTH OF CARTERET-CRAVEN COUNTY LINE TO SOUTH OF SR 1176 (CAROLINA PINES BLVD)
TIP NO. R-2405 COUNTY: CRAVEN
DESIGNED BY: DGM
CHECKED BY: TRK DATE: 6/18/2018

BEHRMUSER COMPANY

4

2/2018
eanderson
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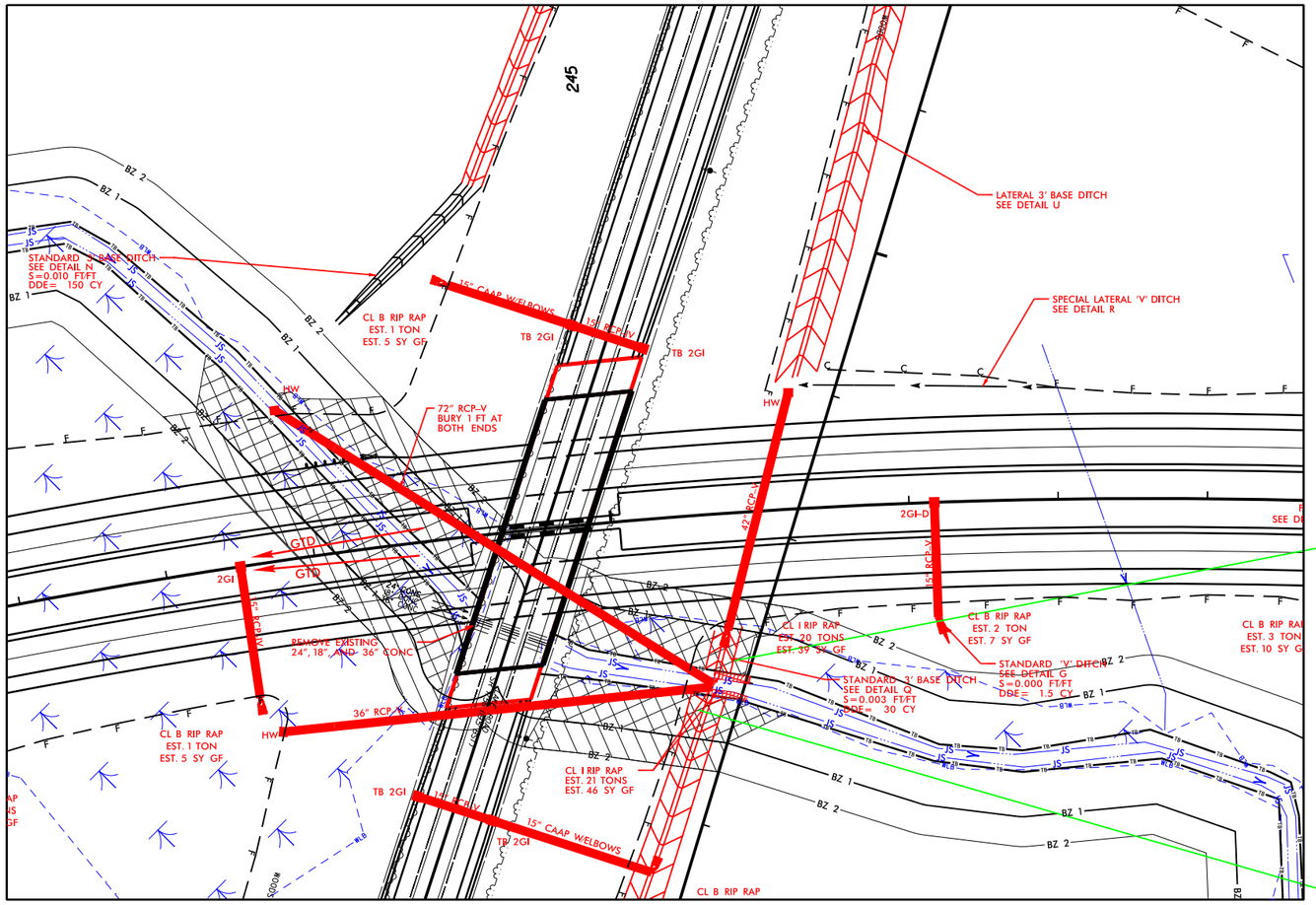
ENLARGEMENT SITE 3

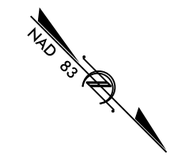
MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

ONLY IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN ON THIS SHEET. FOR ADDITIONAL IMPACTS DUE TO DETOUR SEE PSH 2B–2 (PERMIT DRAWING SHEET 4 OF 20).



PLAN VIEW



50' 0' 50' 100' 150'
GRAPHIC SCALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)
US 70 (HAVELOCK BYP)
FROM SOUTH OF CARTERET/
CRAVEN COUNTY LINE
TO SOUTH OF SR 1176

SHEET 10 OF 20 08/03/2018

8/2/2018
beanderson
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 11 OF 20

8/17/99

REVISIONS

7/13/2018 - PARCEL 2 - REMOVED TDE STATION -L- 292+10 TO 292+65 RT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

285 290 295

S10

MATCH LINE STA. 282+00 SEE SHEET 19

MATCH LINE STA. 296+00 SEE SHEET 21

CLASS II RIP RAP

TOE PROTECTION CLASS B RIP RAP EST = 35 TONS GT EST = 70 SY SEE DETAIL J

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

PDE

CLASS II RIP RAP

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF 15" RCP-III

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

TB 2GI

15" RCP-IV

2GI

FS SEE DETAIL E

15" CAAP W/ELBOWS

18" CAAP W/ELBOWS

18" RCP-IV

18" CAAP W/ELBOWS

2GI-D FS SEE DETAIL B

WOODS

-L-

-BL-48

-BL-49

-BL-50

N 8°29'42.5" W

SOUTHWEST PRONG OF SLOCUM CREEK

BZ 1

BZ 2

W13

W13

S9 IS EXEMPT FROM BUFFER RULES

S9

SITE 5

ALLOWABLE IMPACTS ZONE 1

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

ALLOWABLE IMPACTS ZONE 2

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEETS 59 FOR PROFILE -L-

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

7/30/2018
sjmartin2
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SITE 6

REVISIONS
PLAT ZONE
PARCEL 12 - NEW PARCEL NUMBER
PARCEL 13 - ADDED TIE STATION -RPDD- 50 RT
PARCEL 14 - ADDED TIE STATION -RPDD- 50 RT TO 20+75 RT
PARCEL 15 & 16 - STATION CHANGE -RPDD- 70+75 RT TO 71+44 RT
PARCEL 15 & 16 - ADDED TIE STATION -RPDD- 70+75 RT
PARCEL 15 & 16 - STATION CHANGE -RPDD- 70+75 RT TO 71+44 RT
PARCEL 15 & 16 - ADDED TIE STATION -RPDD- 71+44 RT
PARCEL 17 - ADDED TIE STATION -RPDD- 71+44 RT
PARCEL 18 - REVISED TIE STATION -RPDD- 71+44 RT TO 71+50 RT
PARCEL 18 - REVISED TIE STATION -RPDD- 71+50 TO 20+50 RT
PARCEL 18 - STATION CHANGE -RPDD- 71+50 RT TO 72+12 RT
PARCEL 19 - ADDED TIE STATION -RPDD- 72+12 RT
PARCELS 15,17,18,19 - REVISED TIE STATION -RPDD- 69+80 TO

-RR -EY2- POT Sta.10+00.00

ATLANTIC & EAST CAROLINA RAILROAD

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

MATCH LINE STA. 505+00 SEE SHEET 35

REMOVE EXIST. BRIDGE DECK

BANK STABILIZATION CLASS I RIP RAP 11 TONS

BANK STABILIZATION CLASS I RIP RAP 14 TONS

RIPRAP CHANNEL

-RP2C- STA. 2+75.00

2 @10'x8' RCBC

CL 8 RIP RAP EST. 1 TON EST. 5 SY GF

LATERAL 5' BASE DITCH SEE DETAIL GG DDE = 3,339 CY

GRASS SWALE DATA
DA= 29.0 ac (3.57 ac imprv.)
SLOPE= 0.01 ft/ft
L REQ.(total)= 2990 ft
L REQ.(imp)= 358 ft
L PRO.= 982 ft
Tc=24min
Q2= 49.6 cfs
V2= 3.79 ft/s
Q2= 1.42
Q10= 59.3 cfs
V10= 3.98 ft/s
D10= 1.55
-L- STA. 509+55 to 510+00 LT

Boundary Limits of Craven County Landfill Cell 1

RETAIN

CL 11B RAP EST 15 TONS EST. 30 SY GF

CL 11B RAP EST 2 TONS EST. 7 SY GF

LATERAL 5' BASE DITCH SEE DETAIL GG DDE 462 CY

LATERAL 5' BASE DITCH SEE DETAIL GG DDE = 93 CY

CL 8 RIP RAP EST. 1 TON EST. 5 SY GF

PROJECT REFERENCE NO.	SHEET NO.
R-1015	39
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BUFFER DRAWING SHEET 13 OF 20

REVISIONS

8/17/99 - PARCEL 39 - REVISED TIDE STATION -L- 563+44 TO 563+64 RT
PARCEL 38 - ADDED TIDE STATION -L- 561+00 TO 561+76 LT

7/13/2018

7/31/2018
mgbarry
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$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	45
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING SHEET 14 OF 20

SITE 8

REVISIONS 8/17/99

7/13/2018 -
PARCELS 2,49 - ADDED PDE STATION -Y4- 33+95 TO 40+80 RT
PARCELS 2,49 - REVISED TCE DISTANCE -Y4- 36+25 TO 40+80 RT
PARCELS 2,49 - CHANGED TCE DISTANCE -Y4- 34+68 TO 40+80 RT
PARCEL 2 - REVISED TCE STATION -Y4DR- 10+60 TO 13+06 LT
PARCELS 2,50,51 - CHANGED PUE TO DUE STATION -Y4- 33+50 TO 40+80 LT

MICHAEL O. WOODRUFF, et ux

EDWARD J. DESTEFANO, et ux

WILLIAM LESLIE GRIFFIN

MARGARET ELLA JONES

DANIEL F. WALSH, IV, et ux

WILLIAM D. WANICK, et ux

MALCOLM D. CIESZKO

-Y4- POT Sta. 32+60.00

-Y4DR- PT Sta. 11+31.20

-Y4DR- PC Sta. 10+47.00

-Y4DR- POT Sta. 10+00.00

-Y4- POT Sta. 38+65.00

-Y4- STA. 34+24 TO 43+34 LT

GRASS SWALE DATA
DA= 3.6ac
SLOPE= 0.01898 ft/ft
L REQ.= 384'
L PRO.= 1340'
Q2= 13.1 cfs
V2= 3.6 fps
D2= 0.80'
Q10= 17.7 cfs
V10= 3.9 fps
D10= 0.94'

GRASS SWALE DATA
DA= 2.5ac
SLOPE= 0.016275 ft/ft
L REQ.= 260'
L PRO.= 810'
Q2= 9.1 cfs
V2= 2.6 fps
D2= 0.79'
Q10= 12.3 cfs
V10= 2.9 fps
D10= 1.2'
-Y4- STA. 34+33 TO 43+50 RT

RETAIN EXIST. 12" RCP

72" RCP-IV BURIED 1FT REMOVE EXIST. 42" CMP

TIE TO EXISTING DITCH

RIPRAP STALL BE INSTALLED FLUSH WITH CHANNEL BANKS AND BED

CL I RIP RAP EST. 20 TONS EST. 39 SY GF

STANDARD 2' BASE DITCH SEE DETAIL FFF S=0.0578 FT/FT DDE= 21 CY CL I RIP RAP=30 TONS

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL WW

LATERAL 2' BASE DITCH SEE DETAIL T

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

15" CAP W/ELBOWS

REMOVE EXIST. 15" CMP

BEGIN CONSTRUCTION -Y4- STA. 34+40.00

MATCH LINE -Y4- STA. 40+80 SEE SHEET 21

SUNSET ROAD SR 1791 (19.5' BST)

PULLEY ROAD SR 1787 (18.5' BST)

50' 0' 50' 100' 150'
GRAPHIC SCALE

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

SEE SHEET 83 FOR PROFILE -Y4-

7/31/2018
mgberry
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$$$$SYSTIME$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-1015	46
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING SHEET 15 OF 20

REVISIONS

7/13/2018 - PARCEL 52 - ADDED TOE STATION -Y4- 55+61 TO 57+46 LT
PARCEL 52 - ADDED TOE STATION -Y4- 58+45 TO 58+96 LT

PARCEL 2 -- REVISED TOE STATION -Y4- 49+51 TO 50+67 RT
PARCEL 2 -- REMOVED TOE STATION -Y4- 52+50 TO 53+00 RT
PARCEL 2 -- ADDED TOE STATION -Y4- 51+10 TO 51+15 RT
PARCEL 2 -- ADDED DUE STATION -Y4- 51+10 TO 51+15 LT
PARCEL 2 -- ADDED TOE STATION -Y4- 58+87 TO 59+37 RT
PARCEL 2 -- ADDED TOE STATION -Y4- 51+45 TO 51+85 LT
PARCEL 2 -- ADDED TOE STATION -Y4- 52+60 TO 53+05 LT

8/17/99

SITE 9

MITIGABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

DENNIS R. LAUGHLIN
52

50

-Y4- PC Sta. 49+51.58

-Y4- PT Sta. 50+76.36

-Y4- PC Sta. 53+38.07

-Y4- PT Sta. 56+35.42

-Y4- POT Sta. 60+65.28

MATCH LINE -Y4- STA. 48+30 SEE SHEET 21

PIPE INLET CHANNEL SEE DETAIL XX

TIE TO EXISTING DITCH

CL I RIP RAP

TIE PROP. DITCH TO NATURAL GROUND

STANDARD 3' BASE DITCH SEE DETAIL N S=1.032% DDE=20CY

LATERAL 3' BASE DITCH SEE DETAIL RR

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

15" CAAP W/ELBOWS

REMOVE EXIST. 15" RCP

CLASS-B RIPRAP 8 TONS

CL B RIP RAP EST. 1 TON EST. 5 SY GF

LATERAL 2' BASE DITCH SEE DETAIL T

TIE PROP. DITCH TO NATURAL GROUND

PIPE OUTLET CHANNEL SEE DETAIL YY

CL I RIP RAP

TIE TO EXISTING DITCH

SPECIAL LATERAL 3' BASE DITCH SEE DETAIL GGG

LATERAL 3' BASE DITCH SEE DETAIL GGG

MAINTAIN EXISTING DITCH

DITCH BLOCK SEE DETAIL ZZ

REMOVE EXIST. 18" RCP

18" RCP

24" RCP

END CONSTRUCTION -Y4- POT STA. 59+37.00

CL I RIP RAP EST. 15 TONS EST. 30 SY GF

SPECIAL LATERAL V DITCH SEE DETAIL R

SPECIAL LATERAL V DITCH SEE DETAIL R

TIE PROP. DITCH TO NATURAL GROUND

STANDARD 3' BASE DITCH SEE DETAIL N S=0.012 FT/FT DDE= 70 CY

SPECIAL LATERAL 3' BASE DITCH SEE DETIAL HHH

84" RCP-IV BURIED 1FT

2X

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

N 45°45'38.6" E

ONLY IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN ON THIS SHEET. FOR ADDITIONAL IMPACTS DUE TO DETOUR SEE PSH 2B-5 AND 2B-6 (PERMIT DRAWING SHEETS 5 AND 6 OF 20).

50' 0' 50' 100' 150'
GRAPHIC SCALE

SEE SHEET 83 FOR PROFILE -Y4-

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

8/2/2018
beanderson
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	47
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING SHEET 16 OF 20

SITE 10

NAD 83

NO ASSOCIATED RECORDS FOUND FOR THIS STRUCTURE

RR ARM

RR ARM

RAILROAD SIGNAL BOX

WALLACE R. POYTHRESS

WALTER J. POYTHRESS

RETAIN EXIST R/W

RETAIN 12" RCP

RETAIN 12" RCP

RETAIN 12" RCP

RETAIN 18" RCP

WLB

WLB

BEGIN CONSTRUCTION -RP2AC- STA. 36+73.83

35

40

-RP2AC-

RETAIN SYSTEM

18" CONC

TOP=22.48
INV=17.94

2GI-C

18" RCP-III

2GI-D

FS

SEE DETAIL B

TOP=20.37
INV=18.16

2GI-B

FS

SEE DETAIL B

2GI-D

N 17° 35' 51.3" W

-SRII62-

RETAIN EXIST R/W

SPECIAL LATERAL V DITCH SEE DETAIL AAA

-RP2AC- PC Sta. 32+80.83

-SRII62- POT Sta. 10+00.00

GRASS SWALE DATA
ENTERING CULVERT VIA 18" RCP

DA = 1.91 ac
L REQ. = 191'
L PRO. = 1198'

SLOPE(max) = 0.016 ft/ft
Q2 = 6.95 cfs
V2 = 3.00 ft/s
D2 = 0.88'
Q10 = 9.36 cfs
V10 = 3.23 ft/s
D10 = 0.98'

STA. 44+72.52 -RP2AC-

-SRII62- PC Sta. 12+24.78

TOP=20.02
INV=16.99

FS

SEE DETAIL B

2GI-D

BZ 2

BZ 1

BZ

BZ 2

BZ 1

BZ

BZ 2

BZ 1

BZ

PROJECT REFERENCE NO.	SHEET NO.
R-1015	48
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BUFFER DRAWING
SHEET 17 OF 20

SITE 10

NAD 83

MATCH LINE STA. -RP2AC- 45+00 SEE SHEET 47

MATCH LINE -RP2AC- STA. 56+00 SEE SHEET 36

EXTEND EX. 3@9'X7' RCBC

END WW FENCE

EXIST R/W

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

US 70 245' BST

5.5' BST 15" RCP-III 2GI

4.5' BST 2GI

US 70 245' BST

-RP2AC- 15" RCP-III

FS SEE DETAIL B

2GI

REMOVE SYSTEM

2GI-A 18" RCP-III

18" CONC

30" RCP-III

18" RCP-III

8"

-SR1116-

GREU (TE-2)

EXISTING R/W

RETAIN 8' CI

SPEC. LATERAL 'V' DITCH
SEE DETAIL DD

GRAVEL PARKING

SPECIAL LATERAL V DITCH
SEE DETAIL S

END CONSTRUCTION
END PAVING
-SR1162- STA. 16+27.00

-SR1162- PT Sta. 18+58.37

-SR1162- POT Sta. 19+24.56

-RP2AC- CS Sta. 52+23.75

-RP2AC- SRS Sta. 54+68.75

50' 0' 50' 100' 150'
GRAPHIC SCALE

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

SEE SHEET 35 AND 36 FOR FILL OF -RP2AC-

JOHN

REVISIONS

7/13/2018 - PARCEL 62 - ADDED PARCEL NUMBER
PARCEL 62 - REVISED TCE STATION -SR1162- 15+46 TO 16+10

7/31/2018
mgberry
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BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	BRIDGE	TEMP ROAD CROSSING	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	12 @ 135' Dual Bridge	-L- 170+00 to		X		11874	8173	20048					
		-L- 176+39											
2	72" RCP-V, Buried 1'	-Y3RPB- 8+09 to	X						21342	12842	34184		
		-Y3RPB- 9+96											
3	72" RCP-V, Buried 1'	-L- 242+20 to	X						20168	13088	33256		
		-L- 245+59											
3	Temp. Detour	-L- 245+59 to			X	4312	2113	6425					
		-L- 246+42											
4	84" RCP-V, Buried 1'	-Y3RPD- 16+26 to	X						17227	9603	26830		
		-Y3RPD-18+42											
5	7@ 135' Dual Bridge	-L- 287+68 to		X		11674	7869	19544					
		-L- 290+04											
6	2 @ 10'X8' RCBC	-L- 509+18 to	X						55373	29278	84651		
		-L- 511+11											
7	36" RCP	-L- 563+14 to	X			417							
		-L- 563+54											
8	72" RCP-IV, Buried 1'	-Y4- 33+67 to	X			3321	1827	5148					
		-Y4- 34+86											
9	2@ 84" RCP, Buried 1'	-Y4- 51+04 to	X						12648	6275	18923		
		-Y4- 52+99											
SUB TOTAL:						31599	19982	51164	126759	71086	197845		

NOTE: Site 9: Zone 1 Mitigable Impacts include 331 sqft of Bank Stabilization.

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)

11/16/2018
SHEET 18 OF 20

Rev. May 2006

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	TEMP ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
9	DETOUR	-Y4DET- 51+85 to		X		5555	4250	9805					
		-Y4DET- 54+45											
10	3 @ 9'X7' RCBC	-RP2AC- 43+26 to	X			5656	2116	7773					
		-RP2AC- 46+15											
SUB TOTAL FROM THIS SHEET :						11212	6366	17578					
SUB TOTAL FROM SHEET 18 :						31599	19982	51164	126759	71086	197845		
TOTAL:						42810	26348	68742	126759	71086	197845		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)

11/16/2018
SHEET 19 OF 20

Rev. May 2006

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (ft^2)	WETLANDS IN BUFFERS ZONE 2 (ft^2)
1	-L- 170+00 to	-L- 176+39	10205	4401
2	-Y3RPB- 8+09 to	-Y3RPB- 9+96	16458	8023
3	-L- 242+20 to	-L- 246+42	16157	6046
4	-Y3RPD- 16+26 to	-Y3RPD-18+42	5915	0
5	-L- 287+68 to	-L- 290+04	11674	7869
6	-L- 509+18 to	-L- 511+11	28173	13360
8	-Y4- 33+67 to	-Y4- 34+86	2578	1038
9	-Y4- 51+04 to	-Y4- 52+99	17515	6857
10	-RP2AC- 43+26 to	-RP2AC- 46+15	3364	823
TOTAL:			112039	48418

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)

11/16/2018
SHEET 20 OF 20

Rev. Jan 2009

09/28/99

TIP PROJECT: R-1015

CONTRACT:

See Sheet 1A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

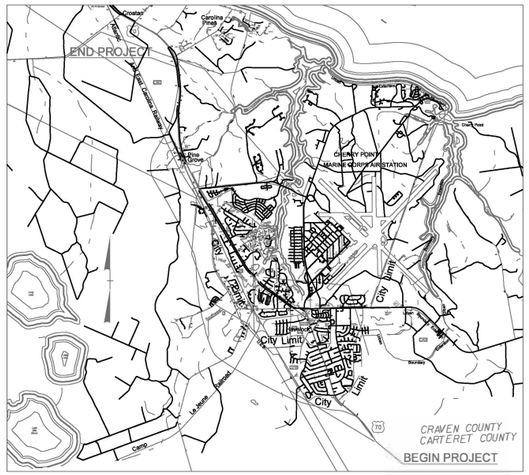
CRAVEN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-1015	NE-1	

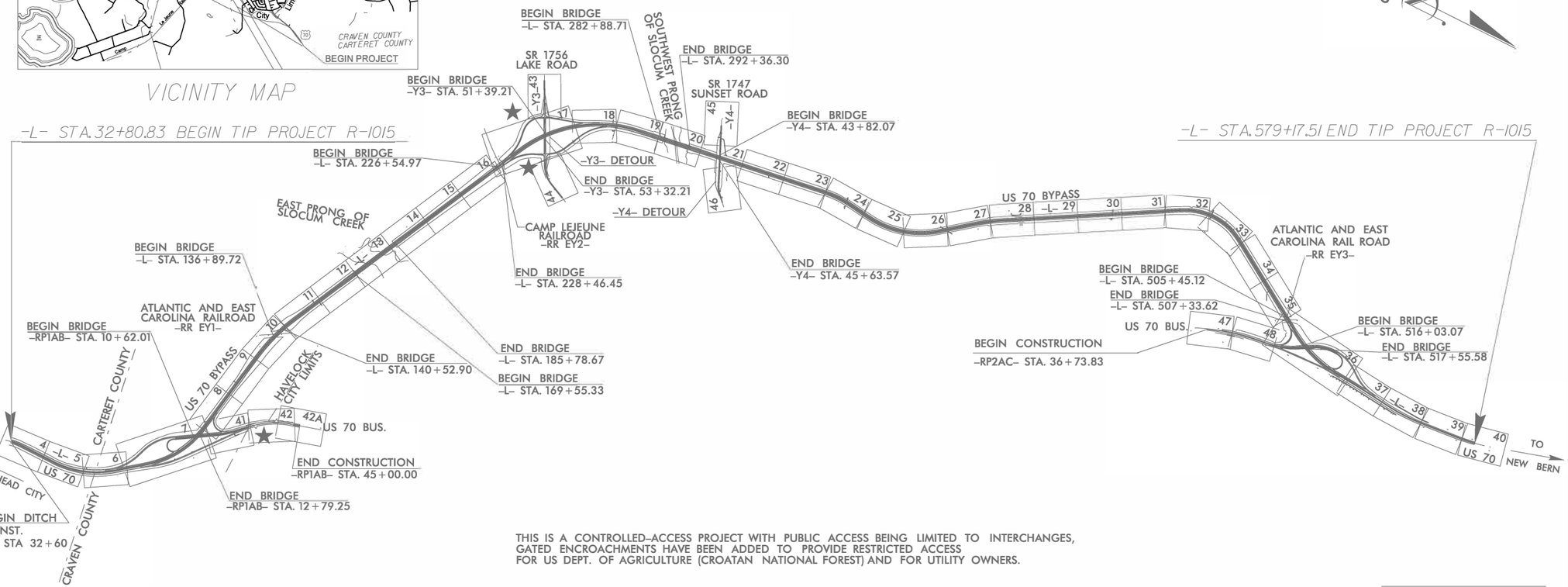
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34360.1.2	NHF-70(49)	PE
34360.1.2	NHF-70(49)	RW
34360.1.2	NHF-70(49)	UTIL
34360.1.2	NHF-70(49)	CONST

NEU UTILITY RELOCATION PERMIT PLANS

LOCATION: US 70 (HAVELOCK BYPASS) FROM SOUTH OF CARTERET /CRAVEN COUNTY LINE TO SOUTH OF SR 1176, (CAROLINA PINES BLVD.)



VICINITY MAP



THIS IS A CONTROLLED-ACCESS PROJECT WITH PUBLIC ACCESS BEING LIMITED TO INTERCHANGES, GATED ENCROACHMENTS HAVE BEEN ADDED TO PROVIDE RESTRICTED ACCESS FOR US DEPT. OF AGRICULTURE (CROATAN NATIONAL FOREST) AND FOR UTILITY OWNERS.

★ SIGNAL LOCATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100 PLANS

50 25 0 50 100 PROFILE (HORIZONTAL)

10 5 0 10 20 PROFILE (VERTICAL)

DESIGN DATA

ADT 2015 = N/A
ADT 2035 = 22,900
K = 9 %
D = 60 %
T = 7 % *
V = 70 MPH
* TTST 3% DUAL 3%
FUNC. CLASS = FREEWAY (FUTURE INTERSTATE)

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R-1015 = 9.691 MILES
LENGTH OF STRUCTURE TIP PROJECT R-1015 = 0.657 MILES
TOTAL LENGTH OF TIP PROJECT R-1015 = 10.348 MILES

Prepared for NCDOT In the Office of:
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX (F-0105)

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 16, 2016

LETTING DATE: FEBRUARY 2, 2019

TIM REID, PE
PROJECT ENGINEER

TRENT HUFFMAN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
moffatt & nichol

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

19-NOV-2018 09:54
R:\Utilities\Engineering\NEU\r-1015_rdy_tsh_NE01_psh.dgn
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-02
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

-L-
PI Sta 33+69.33
△ = 17° 46' 26.7" (RT)
D = 3° 19' 35.2"
L = 534.33'
T = 269.33'
R = 1,722.44'
SE = 0.08
RO = 320.00'
DS = 60 mph

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
1

NAD 83

35

40

-L- PC Sta. 31+00.00

+50.00 -L-
125.00' LT
EXIST R/W

TAPER TO EXIST

+50.00

SPECIAL CUT 8' BASE DITCH
SEE DETAIL A

+34.33 -L-
125.00' LT

+50.00 -L-
135.00' LT
125.00' LT

850.00' LANE DROP TAPER

SPECIAL CUT 8' BASE DITCH
SEE DETAIL A

BEGIN WW FENCE

HW

2 @ 36" RCP-V
BURIED 1.0 FT

REMOVE
SYSTEM

15" RCP-IV

FS
SEE DETAIL B

2GI

GPS RI015-2

-L-

N 0° 26' 50.1" E

MATCH LINE STA.44+00

BEGIN TIP PROJECT R-1015
BEGIN CONSTRUCTION
-L- POC STA 32+80.83

2 @ 36" RCP-V
BURIED 1.0 FT

FIBER
HOOK-UP

PROP U/G COMMUN CONDUIT

40.00'
TYP

87.66'

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

+34.33 -L-
125.00' RT

BEGIN WW FENCE

+50.00 -L-
125.00' RT
EXIST R/W

CLASS I RIP RAP
EST. 30 TONS
EST. 60 SY GF

SPECIAL CUT 8' BASE DITCH
SEE DETAIL RRR

-L- PT Sta. 36+34.33

SPECIAL CUT 8' BASE DITCH
SEE DETAIL RRR

REM

PUE

UNDERGROUND COMMUNICATION LINE

REPLACE EXISTING POLE

OVERHEAD POWER AND COMMUNICATION LINES

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
1

SEE RDWY STD DWGS 865.01
FOR CABLE GUIDERAIL INSTALLATION

SEE SHEET 49 FOR PROFILE -L-

19-NOV-2018 09:53
R:\Utilities\Engineering\NEU\r-1015_rdy4_NE02_psh.dgn
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-03
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4909 FAX
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

-L-
PI Sta 58+21.81
△ = 38° 01' 15.2" (LT)
D = 1° 53' 54.5"
L = 2,002.71'
T = 1,039.80'
R = 3,018.00'
SE = 0.06
R0 = 300.00'
DS = 65 mph

NAD 83

45 50 55

-L- PC Sta. 47+82.02

MATCH LINE STA.44+00

MATCH LINE STA.58+00

+00.00 -L-
125.00' LT
135.00' LT

+82.02 -L-
125.00' LT

+50.00 -L-
125.00' LT
140.00' LT

+25.00

850' LANE DROP TAPER

SPECIAL CUT 8' BASE DITCH
SEE DETAIL A

SEE DETAIL B

SPECIAL CUT 8' BASE DITCH
SEE DETAIL RRR

300' TAPER

15" RCP-IV

N 0° 26' 50" E

-BY-1 -BY-2 -BY-3

501 502 504 505 506 507

2GI

FO

8"

24"

REM

HC HC

PUE

CL B RIP RAP
EST. 3 TONS
EST. 10 SY GF

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

BMI

sta.44+00 -L- RT

A2=0.663 AC

sta.53+78 -L- RT

Sta.57+77

A1= 0.006

Sta.58+00 -L-

UNDERGROUND COMMUNICATION LINE

OVERHEAD POWER AND COMMUNICATION LINES

POWER TRANSMISSION LINE

U/G COMMON CONDUIT

PROP DITCH FOR 6 COMMON LINES

SITE 1

PERMANENT FILL IN WETLAND
FOR THE PROP.
POWER POLE= 4 X.0001AC=0.0004AC

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

HC HC

DENOTES HAND CLEARING

SEE SHEET 50 FOR PROFILE -L-

18-NOV-2018 09:45
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4865 FAX
NC License NO.: F-0105

8/17/99

REVISIONS

NAD 83

-L-
PI Sta 58+21.81
Δ = 38° 01' 15.2" (LT)
D = 1° 53' 54.5"
L = 2,002.71'
T = 1,039.80'
R = 3,018.00'
SE = 0.06
R0 = 330' (339')
DS = 65 mph

-RPIB-
PIs Sta 1+27.66
θs = 2° 15' 20.7"
θs = 3° 55' 48.1"
Ls = 234.00'
LT = 127.66'
ST = 106.56'

PI Sta 6+71.71
Δ = 28° 46' 49.2" (LT)
D = 3° 21' 30.6"
L = 856.94'
T = 437.71'
R = 1,706.00'
SE = 0.06
R0 = 234.00'
DS = 50 mph

POWER TRANSMISSION EASEMENT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

-RPIB- ST Sta. 0+00.00 = -L- POC Sta. 64+74.20

-RPIB- SC Sta. 2+34.00

-L- PT Sta. 67+84.73

MATCH LINE STA. 58+00

MATCH LINE STA. 72+00

MATCH LINE -RPIB-

G1 - GATED ENCROACHMENT
SEE X-9 FOR GRADE
12' PAVED W/2' SHLD

CARTERET COUNTY
CRAVEN COUNTY

+10.00 -L-
140.00' LT

CL B RIP RAP
EST. 5 TONS
EST. 14 SY GF

SPECIAL CUT 8' BASE DITCH
SEE DETAIL A

+00.00 -RPIB-
100.00' LT

ABANDON

+34.00 -RPIB-
110.00' LT

REMOVE SYSTEM

24" RCP-III

15" RCP-IV

18" CONC W/FES

2GI-D

SEE DETAIL B

-BY-4

-BY-5

REMOVE

300' TAPER

REM

EORI

FIBER HOOK UP

SPECIAL CUT 8' BASE DITCH
SEE DETAIL RRR

ABANDON

+84.73 -L-
130.00' RT

BM2

50.00' TYP

81.03 -L-
130.00' RT

Sta.58+00 -L- RT

Sta.72+00-L- RT

HC HC DENOTES HAND CLEARING

UNDERGROUND COMMUNICATION LINE

OVERHEAD POWER AND COMMUNICATION LINES

SITE 2

A=0.560 AC

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

PERMANENT FILL 5 POWER POLES= .0005 AC

SEE SHEET 5I FOR PROFILE -L-
SEE SHEET 7I FOR PROFILE -RPIB-

19-NOV-2018 09:59
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$$$$USERNAME$$$$

REVISIONS
7/13/2018 - PARCEL 1 - ADDED TOE STATION -RPICD- 5+51.0 11.00 RT

PROJECT REFERENCE NO.	SHEET NO.
R-4015	NE-05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

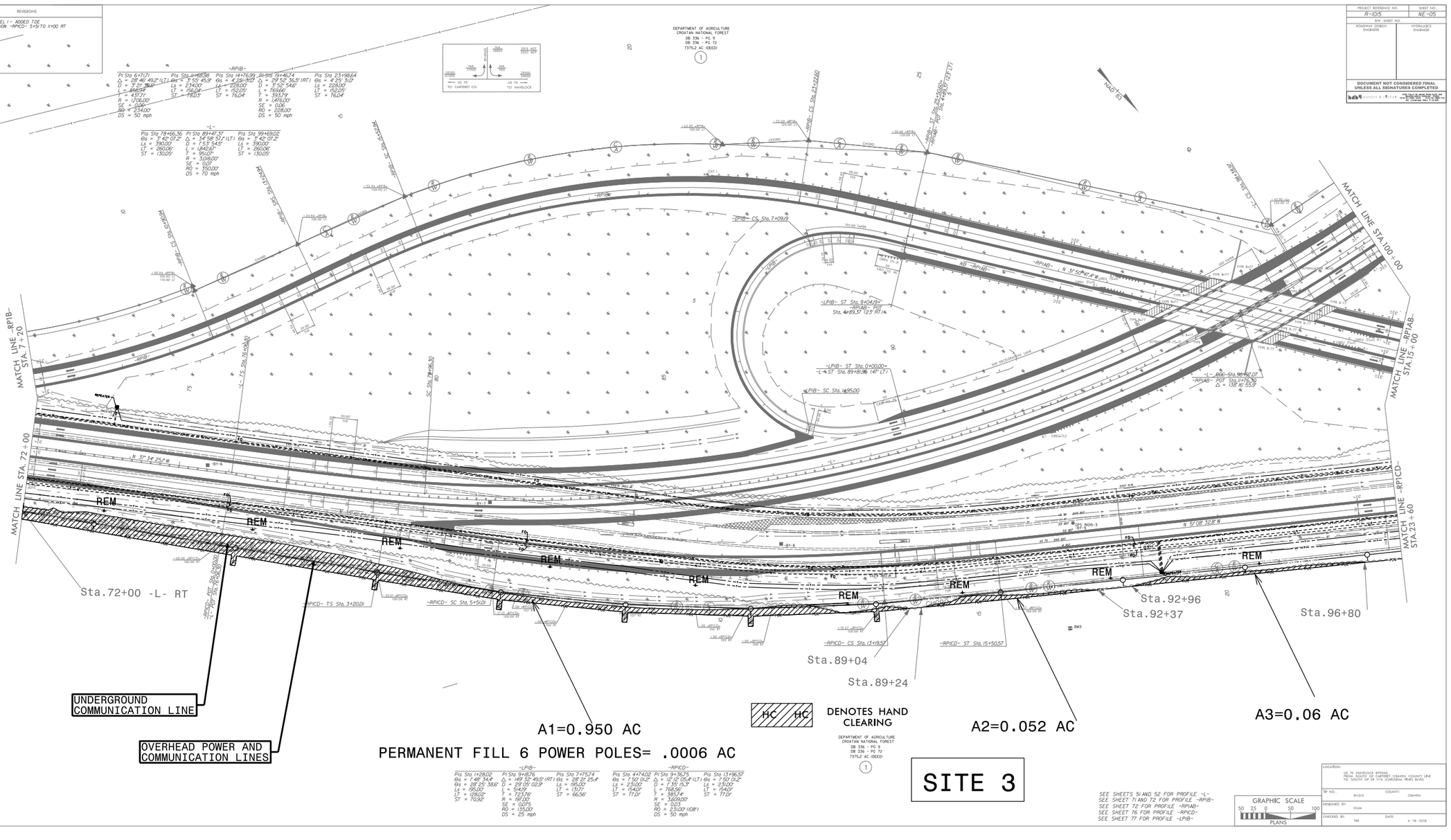
DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC ±DEED

-RPIB-

Pi Sta 6+71.71	Pi Sta 11+68.56	Pi Sta 14+76.99	Pi Sta 19+46.74	Pi Sta 23+98.64
Δ = 28° 40' 49.2" (LT)	Δ = 5° 55' 45.9"	Δs = 4° 25' 31.1"	Δ = 29° 52' 36.5" (RT)	Δs = 4° 25' 31.1"
D = 3° 21' 38.0"	Ls = 234.00'	Ls = 228.00'	D = 3° 52' 54.6"	Ls = 228.00'
L = 849.55'	LT = 756.04'	LT = 152.05'	L = 769.66'	LT = 152.05'
T = 437.71'	ST = 780.5'	ST = 76.04'	T = 393.79'	ST = 76.04'
R = 1706.00'			R = 1476.00'	
SE = 0.06'			SE = 0.06'	
RD = 1534.00'			RD = 2288.00'	
DS = 50 mph			DS = 50 mph	

-L-

Pi Sta 78+66.36	Pi Sta 89+47.37	Pi Sta 99+69.02
Δs = 3° 42' 07.2"	Δ = 34° 58' 57.1" (LT)	Δs = 3° 42' 07.2"
Ls = 390.00'	D = 7° 5' 54.5"	Ls = 390.00'
LT = 260.06'	L = 1,842.67'	LT = 260.06'
ST = 130.05'	T = 950.01'	ST = 130.05'
	R = 808.00'	
	SE = 0.01	
	RD = 950.00'	
	DS = 70 mph	



-LPIB-

Pis Sta 1+28.02	Pi Sta 9+18.76	Pis Sta 7+75.74
Δs = 1° 48' 34.4"	Δ = 149° 32' 49.5" (RT)	Δs = 28° 27' 25.4"
Ds = 28° 25' 39.6"	D = 29° 05' 02.9"	Ls = 95.00'
Ls = 195.00'	L = 544.9'	LT = 13.71'
LT = 128.02'	T = 723.76'	ST = 66.56'
ST = 70.35'	R = 197.00'	
	SE = 0.07%	
	RD = 135.00'	
	DS = 25 mph	

-RPICD-

Pis Sta 4+74.02	Pi Sta 9+36.75	Pis Sta 13+96.57
Δs = 1° 50' 03.2"	Δ = 12° 13' 05.4" (LT)	Δs = 1° 50' 01.2"
Ls = 231.00'	D = 1° 35' 15.3"	Ls = 251.00'
LT = 154.01'	L = 768.56'	LT = 154.01'
ST = 77.01'	T = 385.4'	ST = 77.01'
	R = 3,609.00'	
	SE = 0.03	
	RD = 2,300.00' (108')	
	DS = 50 mph	

SEE SHEETS 5I AND 52 FOR PROFILE -L-
SEE SHEET 71 AND 72 FOR PROFILE -RPIB-
SEE SHEET 72 FOR PROFILE -RPIAB-
SEE SHEET 76 FOR PROFILE -RPICD-
SEE SHEET 77 FOR PROFILE -LPIB-

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:	US 70 (HAVELOCK BYPASS) FROM SOUTH OF CARTERET/CRAVEN COUNTY LINE TO SOUTH OF SR 1174 (CAHOONA PINES BLVD)
TIP NO.: R-4015	COUNTY: CRAVEN
DESIGNED BY: DGH	
CHECKED BY: TRR	DATE: 4 /18 /2018

RUNNING DATE/TIME: 4/18/2018 11:55:11 AM
DRGN: C:\USERS\DGHOLT\DESKTOP\R-4015_NE-05_SITE 3.DGN

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-06
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

-L-
PIs Sta 129+36.09
Δs = 1° 28' 37.4"
Ls = 296.00'
LT = 197.34'
ST = 98.67'

NAD 83

DUKE TRANSMISSION OVERHEAD POWER LINE

CP&L R/W

Sta.116+63-L- LT

DUKE TRANSMISSION OVERHEAD POWER LINE

A2=0.725 AC

Sta.120+51-L- LT

Sta.119+66-L- RT

A1=0.576 AC

Sta.121+28

HC HC — DENOTES HAND CLEARING

SITE 4

DUKE TRANSMISSION LINE EASEMENT (TO BE ACQUIRED BY OTHERS)

DUKE TRANSMISSION OVERHEAD POWER LINE

DUKE TRANSMISSION OVERHEAD POWER LINE

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

STA.114+00

STA.128+00

-L- N 79° 57' 36.8" W

REM

BM6

SEE SHEETS 53 FOR PROFILE -L-

19-NOV-2018 \GO4
R:\Line Engineering\NEU\r-1015_rdg9_NE06_psh.dgn
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-07
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
1

-L-
PIs Sta 129+36.09
Θs = 1° 28' 37.4"
Ls = 296.00'
LT = 197.34'
ST = 98.67'
PI Sta 137+14.92
△ = 13° 30' 48.2" (RT)
D = 0° 59' 52.8"
L = 1,354.03'
T = 680.17'
R = 5,741.00'
SE = 0.04
RO = 200.00'
DS = 70 mph

-RR EYI-
POT Sta. 10+00.00

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

MATCH LINE STA. 128+00

MATCH LINE STA. 142+00

Sta.128+97

Sta.136+09

130

140

EXIST RR R/W

EXIST RR R/W
200.00' LT

EXIST RR R/W
200.00' RT

200' R/W

N 30° 22' 18.5" W

ATLANTIC & EAST CAROLINA RR

-BYI-1

BL-7

BL-8
-DYI-

BL-2I

-DXI-2

-L- STA 138+31.09
-RR EYI- STA 15+66.39
△ = 46° 09 49.6"

+34.75 -L-
200.00' LT

+34.75 -L-
200.00' RT

CHORD

CA

RW

RM7

1013

36" RCP-IV
EQUALIZER

END WW FENCE

TYPE B-77

FS
SEE DETAIL B

GREU (TL-3)
8:1

2GI

1004

15" RCP-IV

1007

1008

TB 2GI

BEGIN WW FENCE

STANDARD 12' BASE DITCH
W/CLASS I RIP RAP
SEE DETAIL E
S=0.001 FT/FT
DDE= 400 CY
CLASS I RR= 560 TONS

1002

18" CAAP
W/ELBOWS

1003

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

1010

1005

15" CAAP
W/ELBOWS

1006

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

1009

FILL EXISTING
DITCH TO
NATURAL GROUND

REM

DUKE TRANSMISSION
OVERHEAD POWER LINE

DUKE TRANSMISSION
LINE EASEMENT
(TO BE ACQUIRED BY OTHERS)

PROP O/H POW LINES (TRANS)

POWER TRANSMISSION EASEMENT

DUKE TRANSMISSION
OVERHEAD POWER LINE

DUKE TRANSMISSION
OVERHEAD POWER LINE

DUKE TRANSMISSION LINE EASEMENT
(TO BE ACQUIRED BY OTHERS)

HC HC DENOTES HAND CLEARING

A=1.827AC

SITE 5

SEE SHEET 53 FOR PROFILE -L-

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 72
7375.2 AC (DEED)
1

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$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-08
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

-L-
PI Sta 137+14.92
△ = 13° 30' 48.2" (RT)
D = 0° 59' 52.8"
L = 1,354.03'
T = 680.17'
R = 5,741.00'
SE = 0.04
RO = 200.00'
DS = 70 mph

PIs Sta 144+87.46
Θs = 1° 28' 37.4"
Ls = 296.00'
LT = 197.34'
ST = 98.67'

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

POWER TRANSMISSION EASEMENT
100'±R/W

NAD 83

WOODS

145 150 155

+88.88 -L-
200.00' LT

+84.78 -L-
150.00' LT

+31.00 -L-
125.00' LT

+10 -L-
125' LT
160' LT

+40 -L-
125' LT
150' LT

REPLACE EXISTING POLE
DUKE ENERGY

G38 - GATED ENCROACHMENT
SEE X-76 FOR GRADE
12' PAVED W/2' SHLD

END WW FENCE

BEGIN WW FENCE
MAINTAIN EXIST. CHANNEL

CHORD

36" RCP-IV
EQUALIZER

50.00'
TYP

+38.78

1120 1114 TB 2GI 1110 CL B RIP RAP EST. 1 TON EST. 5 SY GF 15" CAAP W/ELBOWS 1109 GREU (TL-3) TB 2GI 8:1 1116 10'R HW 1118 10'R HW

MATCH LINE STA.142+00

GREU (TL-3) 1103 2GI FS SEE DETAIL B -L- BL-22 1108 2GI FS SEE DETAIL B N 63° 29' 33.7" W 1112 1123 BL-23 2GI 15" RCP-IV

MATCH LINE STA.156+00

1101 TB 2GI 15" CAAP W/ELBOWS 1102 CL B RIP RAP EST. 1 TON EST. 5 SY GF

1104 TB 2GI 18" RCP-IV 1115 CL B RIP RAP EST. 2 TONS EST. 7 SY GF 1122 18" CAAP W/ELBOWS

1107 15" CAAP W/ELBOWS TB 2GI CAT-1 8:1 1106 1105 CL B RIP RAP EST. 2 TONS EST. 7 SY GF

1117 CL I RIP RAP EST. 15 TONS EST. 30 SY GF

-L- CS Sta. 147+88.78
-L- ST Sta. 146+84.78

+84.78 -L-
150.00' RT

+88.78 -L-
200.00' RT

EXIST RR R/W
200.00' LT

+31.00 -L-
125.00' RT

+31 -L-
135' LT

+50 -L-
135' LT

+50 -L-
125' LT

LATERAL 'V' DITCH
SEE DETAIL F
DDE = 346 CY

TIE PROP. DITCH TO EXISTING DITCH

+95 -L-
125' RT
END WW FENCE

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

+15 -L-
170' RT

G38 - GATED ENCROACHMENT
SEE X-90 FOR GRADE
12' PAVED W/2' SHLD

BM8
NCDOT GPS RIO15-6

+50 -L-
125' RT

1119 PDE

+56 -L-
155' RT

+40 -L-
170' RT

non-JS ditch
(meeting @ NCDOT
01/23/2018)

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

POWER TRANSMISSION EASEMENT
100'±R/W

SEE SHEETS 54 FOR PROFILE -L-

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-09
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.# F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

160

165

MATCH LINE STA.156+00

MATCH LINE STA. 170+00

REPLACE EXISTING POLE
DUKE ENERGY

N 63° 29' 33.7" W

-L-

BL-24

BL-25

BL-26

BL-1

BL-2

2GI

WOODS

MEDIAN 'V' DITCH
SEE DETAIL NN

500.00' MEDIAN TAPER

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

CL B RIP RAP
EST. 3 TONS
EST. 10 SY GF

CLASS II RIP RAP

CAT-1
8:1

GREU (TL-3)
8:1

TB 2GI

TYPE B-77

15" CAAP W/ELBOWS

18" CAAP W/ELBOWS

15" RCP-IV

36" RCP EQUALIZER

LATERAL 'V' DITCH
SEE DETAIL H
DDE = 15 CY

POWERLINE EASEMENT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE SHEET 54 FOR PROFILE -L-

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REVISIONS

7/13/2018 -
PARCEL 4 - REVISED TCE STATION -Y1- 59+02 TO 61+00 LT
PARCEL 4 - ADDED TCE STATION -Y3RPD- 13+50 TO 15+67 LT
PARCEL 4 - CHANGED TOE TO POE AND REVISED AREA STATION -Y3RPD- 15+67 TO 17+62 LT
PARCEL 4 - ADDED TCE STATION -Y3RPD- 17+67 TO 20+23 LT
PARCEL 4 - ADDED TCE STATION -Y3RPA- 13+45 TO 15+48 RT
PARCEL 4 - ADDED POE STATION -Y3RPA- 15+48 TO 15+87 RT
PARCEL 4 - ADDED TCE STATION -Y3RPA- 15+87 RT TO -Y3- 45+00 LT
PARCEL 4 - ADDED TCE STATION -Y3RPD- 18+62 LT TO -Y3- 45+08 RT
8/14/2018
PARCEL 4 - REVISED PUE AND TCE STATION -Y3- 45+05 RT

PERMANENT FILL 2 POWER POLES
= 2x0.0001=.0002 AC

HC HC DENOTES HAND CLEARING

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

SITE 6

OVERHEAD POWER AND COMMUNICATION LINES

Sta.243+32 -L- LT

A1(BZ1)=63 SQ FT

Sta.243+42 -L- LT
A2(BZ2)= 559 SQ FT
Sta.243+63-L- LT

Sta.53+97 -Y3-

A3=.089AC

Sta.59+17 -Y3-

A4=.095 AC

Sta.61+00 -Y3-

Sta.55+60 -Y3-

Sta.243+41 -L- LT

MATCH LINE -Y3- STA 45+00 SEE SHEET 43

MATCH LINE STA.254+00

MATCH LINE STA.226+00

MATCH LINE -Y2- STA. 61+00

MATCH LINE -Y3RPA- STA. 8+50 SEE SHEET 44

MATCH LINE -Y3RPC- STA. 14+00 SEE SHEET 44

REM

A

B

C

D

SEE SHEETS 57 FOR PROFILE -L-
SEE SHEET 78 FOR PROFILE -Y3-
SEE SHEETS 79 AND 80 FOR PROFILE -Y3RPA-
SEE SHEETS 80 AND 81 FOR PROFILE -Y3RPB-
SEE SHEETS 81 FOR PROFILE -Y3RPC-
SEE SHEETS 82 FOR PROFILE -Y3RPD-

GRAPHIC SCALE
50 25 0 50 100
PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-5015	NE-01
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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LOCATION:
US 70 (MAYNOCK BYPASS)
FROM SOUTH OF SR 1172 (CRAVEN COUNTY LINE)
TO SOUTH OF SR 1174 (CLARONDA PINES BLVD)

TIP NO.: R-5015	COUNTY: CRAVEN
DESIGNED BY:	DGN
CHECKED BY: TSR	DATE: 6 /18 /2018

RAMS-2018 (GIS)

8/17/99

REVISIONS

7/13/2018 – PARCEL 2 AND PARCEL 5 – REVISED TCE STATION L 267+00 RT
8/14/2018 – PARCEL 2 – REVISED R/W AND TCE FROM STATION –Y3RPD– 1+98 TO STATION –L– 272+98.93 RT
PARCEL 5 – REVISED R/W STATION –Y3RPD– 1+98 RT

PROJECT REFERENCE NO.	SHEET NO.
R–1015	NE–11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781–4626 VOICE (919) 781–4869 FAX
NC License NO.: F-0105

–L–

PIs Sta 236+02.35
Θs = 2° 30' 53.3"
Ls = 360.00'
LT = 240.02'
ST = 120.02'

PI Sta 256+33.26
Δ = 49° 58' 05.0" (RT)
D = 1° 23' 49.6"
L = 3,576.51'
T = 1,910.94'
R = 4,101.00'
SE = 0.050
RO = 250.00'
DS = 70 mph

–Y3RPA–

PIs Sta 0+66.67
Θs = 1° 22' 52.6"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 6+37.36
Δ = 4° 16' 02.1" (RT)
D = 2° 54' 40.9"
L = 146.57'
T = 73.32'
R = 1,968.00'
SE = 0.060
RO = 125.00'
DS = 50 mph

PIs Sta 4+97.39
Θs = 2° 54' 40.9"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

WEYERHAEUSER COMPANY
DB 1048 – PG 1014
4

NAD 83

MATCH LINE –Y3RPA– STA. 8+50

–Y3RPA– CS Sta. 7+10.61

–Y3RPA– SC Sta. 5+64.04

–Y3RPA– TS Sta. 3+64.04

–Y3RPA– ST Sta. 2+00.00

–L– POT ST Sta. 262+50.30 = –Y3RPA– TS Sta. 0+00.00 (47° LT)

+10.61 –Y3RPA– 75.00' RT
+64.04 –Y3RPA– 75.00' RT
+64.04 –Y3RPA– 75.00' RT
+00.00 –Y3RPA– 75.00' RT
+00.00 –Y3RPA– 75.00' RT
+00.00 –L– 125.00' LT

CHORD
300.00' TAPER

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

S 27° 02' 25.2" E

–BL–42
–BL–43
–L–

FS
SEE DETAIL B
2GI–D
2GI

15" RCP–IV
18" RCP–V

WOODS
GTD

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

S 52°05'55" W 696.98'

RETAIN EXIST. CMP
+40 –L– 198' LT
+92 –L– 198' LT
+45 –L– 125' LT
+01 –L– 125' LT

G4 – GATED ENCROACHMENT
SEE X–141 FOR GRADE
12' PAVED W/2' SHLD

END WW FENCE
BEGIN WW FENCE

DUE TO CONSTRUCTION

10' R
10'R
8:1
CAT–1
4" CAP W/ BLOCKS

REM

POWER LINE EASEMENT

LATERAL 'V' DITCH
SEE DETAIL L
DDE = 89 CY

SC Sta. 1+98.00
+98.00 –Y3RPD– 100.00' LT
T–TURNAROUND
20'R
+75 –Y3RPD– 170' LT
+75 –Y3RPD– PROP R/W 160' LT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

BM14
S 45°41'58" W 73.6'

MATCH LINE STA. 254+00

MATCH LINE STA. 268+00

MATCH LINE –Y3RPD– STA. 1+14.00

GTD

18" RCP–V

STANDARD 2' BASE DITCH
SEE DETAIL V
S = 0.000 FT/FT
DDE = 3 CY

TIE PROP. DITCH TO NATURAL GROUND

CL B RIP RAP
EST. 3 TONS
EST. 10 SY GF

+67.59 –Y3RPD– 100.00' LT
+65.59 –Y3RPD– 100.00' LT

ST Sta. 13+65.59
CS Sta. 11+67.59

WEYERHAEUSER COMPANY
DB 1048 – PG 1014
4

–Y3RPD–

PIs Sta 1+14.45
Θs = 1° 23' 54.7"
Θs = 3° 50' 37.2"
Ls = 198.00'
LT = 114.45'
ST = 83.68'

PI Sta 7+01.01
Δ = 37° 38' 15.6" (LT)
D = 3° 52' 54.6"
L = 969.59'
T = 503.01'
R = 1,476.00'
SE = 0.060
RO = 200.00'
DS = 50 mph

PIs Sta 12+33.61
Θs = 3° 50' 34.8"
Ls = 198.00'
LT = 132.03'
ST = 66.03'

FRANK A. MARMAROSE, et ux
DB 1037 – PG 889
5

SEE SHEETS 58 FOR PROFILE –L–
SEE SHEETS 79 FOR PROFILE –Y3RPA–
SEE SHEETS 82 FOR PROFILE –Y3RPD–

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PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-11A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

8/17/99

REVISIONS

7/13/2018 – PARCEL 2 – ADDED TCE STATION –L– 270+00 TO 273+85 RT
PARCEL 2 – REVISED POE STATION –L– 272+99 TO 273+50 RT
PARCEL 2 – ADDED POE STATION –L– 268+15 TO 269+40 LT
PARCEL 2 – ADDED TCE STATION –L– 268+46 TO 278+61 LT

8/14/2018 – PARCEL 2 – REVISED R/W,TCE AND POE FROM STATION –Y3RPD– 1+98 TO –L– 273+50, ADDED R/W MONUMENT –Y3RPD– STATION 0+00 –L– STATION 268+40.75 RT
PARCEL 2 – REVISED MONUMENT TO MATCH STATION AND OFFSET –L– 272+98.83 RT
PARCEL 2 – REVISED POE "L" STATION 268+73 LT

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–L–
PI Sta 256+33.26
Δ = 49° 58' 05.0" (RT)
D = 1° 23' 49.6"
L = 3,576.51'
T = 1,910.94'
R = 4,101.00'
SE = 0.050
RO = 250.00'
DS = 70 mph
PIs Sta 274+18.85
Θs = 2° 30' 53.3"
Ls = 360.00'
LT = 240.02'
ST = 120.02'

NAD 83

POWERLINE EASEMENT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

MATCH LINE STA. 268+00

MATCH LINE STA. 282+00

–L– POC Sta. 268+40.75 = –Y3RPD– ST Sta. 0+00.00

–Y3RPD–
PIs Sta 1+14.45
Θs = 1° 23' 54.7"
Θs = 3° 50' 37.2"
Ls = 198.00'
LT = 114.45'
ST = 83.68'

–L– CS Sta. 272+98.83

–L– ST Sta. 276+58.83

659.25' ACCELERATION LANE

300' TAPER

500.00' MEDIAN TAPER

N 8° 29' 42.1" W

SPECIAL LATERAL 'V' DITCH SEE DETAIL W DDE = 631 CY

BEGIN WW FENCE

END WW FENCE

JB w/SLAB LID SEE SPECIAL DETAIL &SHEET 2C-J)

CL B RIP RAP EST. 3 TONS EST. 10 SY GF

CL B RIP RAP EST. 2 TON EST. 7 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL B RIP RAP EST. 3 TONS EST. 10 SY GF

CL I RIP RAP EST. 77 TONS EST. 150 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

TOE PROTECTION CLASS B RIP RAP EST = 90 TONS GT: EST = 200 SY SEE DETAIL J

LATERAL 'V' DITCH SEE DETAIL L DDE = 89 CY

RIPRAP SHALL BE INSTALLED FLUSH WITH CHANNEL BANKS AND BED

SEE SHEET 58 FOR PROFILE –L–

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.# F-0105

REVISIONS

8/14/2018 - PARCEL 2 - REVISED DUE AND PDE STATION -Y4- 41+16 LT

7/13/2018 - PARCEL 2 - REMOVED PDE STATION -Y4- 41+49 TO 40+80 LT
PARCEL 2 - REVISED PDE STATION -Y4- 41+16 LT TO 40+80 LT
PARCEL 2 - REVISED TCE STATION -Y4- 40+80 LT TO -L- 304+82 LT
PARCEL 2 - REVISED PDE STATION -L- 304+82 LT TO -L- 303+33 LT
PARCEL 2 - ADDED PDE STATION -Y4- 41+16 LT TO -L- 303+33 LT
PARCEL 2 - REVISED TCE STATION -Y4- 40+80 TO 43+00 RT
PARCEL 2 - ADDED PDE STATION -Y4- 40+80 RT TO -L- 300+74 LT

8/17/99

MATCH LINE -Y4- STA. 40+80

MATCH LINE STA. 296+00

MATCH LINE STA. 310+00

MATCH LINE -Y4- STA. 48+30

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

OVERHEAD POWER AND COMMUNICATION LINES

COMMUNICATION UNDERGROUND FIBER OPTIC CABLE

-Y4DR- POT Sta. 16+03.02

-Y4- POT STA. 44+71.82 =
-L- POT STA. 302+41.24
△ = 105° 30' 45.6"

-L-

-Y4DET-

N 8° 29' 42.1" W

500.00' MEDIAN TAPER

REM

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 869 CY

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 447 CY

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 228 CY

CL B RIP RAP
EST. 2 TONS TB 2GI
EST. 7 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL B RIP RAP
EST. 5 TONS
EST. 14 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL I RIP RAP
EST. 20 TONS
EST. 39 SY GF

SPECIAL CUT DITCH
SEE DETAIL X

FS
SEE DETAIL B

END PAVING
-Y4DR- STA. 14+20.00

END
WW FENCE

BEGIN WW FENCE

TYPE-III BARRICADE

TYPE B-77 ATTENUATOR

15" CAAP W/ELBOWS

15" RCP-IV

12" RCP-IV

RCP-V

RCP-IV

2GI-D GTD

2GI

TB 2GI

WOODS

HW

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE SHEET 59 FOR PROFILE -L-
SEE SHEET 83 FOR PROFILE -Y4-
SEE SHEET 90 FOR PROFILE -Y4DR-

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO. F-0105

NAD 83

-L-

PIs Sta 338+17.02	PI Sta 342+17.43	PIs Sta 346+16.55	PIs Sta 354+28.66
Θs = 3° 08' 39.4"	Δ = 9° 46' 26.7" (RT)	Θs = 3° 08' 39.4"	Θs = 3° 47' 00.6"
Ls = 360.00'	D = 1° 44' 48.6"	Ls = 360.00'	Ls = 390.00'
LT = 240.04'	L = 559.54'	LT = 240.04'	LT = 260.06'
ST = 120.03'	T = 280.45'	ST = 120.03'	ST = 130.05'
	R = 3,280.00'		
	SE = 0.060		
	RO = 300.00'		
	DS = 70 mph		

SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

MATCH LINE STA. 338+00

MATCH LINE STA. 352+00

-L- CS Sta. 344+96.51

-L- ST Sta. 348+56.51

-L- SC Sta. 339+36.98

-L- Sta. 351+68.60

LARRY S. PAUL
DB 1033 - PG 750
7

EDWARD J. CIESZKO (ESTATE)
DB 1704 - PG 242
DB 1605 - PG 238
6

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

PFO wetland (meeting 01/23/2018)

CELL TOWER AND BUILDING LOCATION APPROXIMATE WITHIN FENCE

METER BOX

RETAIN PIPES

SPECIAL CUT 8' BASE DITCH SEE DETAIL CCC

BEGIN WW FENCE

END WW FENCE

FILL POND TO NATURAL GROUND

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL 1 RIP RAP EST. 48 TONS EST. 75 SY GF GREU (TL-3)

CL 1 RIP RAP EST. 57 TONS EST. 104 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

G6 - GATED ENCROACHMENT SEE X-200 FOR GRADE 20' PAVED W/2' SHLD

MAINTAIN EXISTING DITCH

60" RCP-III, BURIED 1'

SPECIAL CUT 8' BASE DITCH SEE DETAIL CCC

DO NOT CUT/REMOVE TREES OUTSIDE OF R/W

TIE TO EXISTING CHANNEL

SPECIAL CUT 3' BASE DITCH SEE DETAIL AA

T-TURNAROUND GRAVEL

POWERLINE EASEMENT

WOODEN BULKHEAD

GRAU 350 TL-3

N 7° 34' 03.4" E

UNDERGROUND COMMUNICATION FIBER OPTIC CABLE

SEE SHEETS 6I FOR PROFILE -L-

19-NOV-2018 (Gz)
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

-L-
PI Sta 365+79.01
△ = 38° 07' 30.5" (LT)
D = 1° 56' 24.9"
L = 1,964.95'
T = 1,020.41'
R = 2,953.00'
SE = 0.070
RO = 350.00'
DS = 70 mph

PIs Sta 376+53.61
Θs = 3° 47' 00.6"
Ls = 390.00'
LT = 260.06'
ST = 130.05'

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

MATCH LINE STA. 366+00

MATCH LINE STA. 380+00

-L- ST Sta. 379+13.56

-L- CS Sta. 375+23.56

370

375

POWERLINE EASEMENT

REM

WOODS

SPECIAL CUT 6' BASE DITCH
SEE DETAIL Z

-BL-62

-L-

-BL-63

-BL-64

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

15" RCP-IV

2GI

G7 - GATED ENCROACHMENT
SEE X-211 FOR GRADE
12' PAVED W/2' SHLD

TIE TO EXISTING DITCH

STANDARD 2' BASE DITCH
SEE DETAIL V
S=0.002 FT/FT
DDE= 12CY

+23.56 -L- 100.00' LT

+90 -L- 170' LT

+95 -L- 138' LT

+60 -L- 140' LT

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

+58 -L- 112' LT

MAINTAIN EXISTING DITCH

+09 -L- 153' LT

BEGIN WW FENCE

+13.56 -L- 100.00' LT

+35 PROP R/W

+80 PROP R/W

+66 PROP R/W

END WW FENCE

CHORD

50.00' TYP

REMOVE

FS
SEE DETAIL B

CAT-1
10'R

+13.56 -L- 100.00' RT

+30 -L- 100' RT

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

STANDARD 2' BASE DITCH
SEE DETAIL V
S=0.000 FT/FT
DDE= 142CY

+23.56 -L- 100.00' RT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE SHEETS 62 FOR PROFILE -L-

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-14A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

-L-
PIs Sta 389+15.83 PI Sta 392+92.64
Θs = 1° 26' 08.8" Δ = 5° 23' 33.7" (RT)
Ls = 296.00' D = 0° 58' 12.5"
LT = 197.34' L = 555.87'
ST = 98.67' T = 278.14'
R = 5,906.00'
SE = 0.040
RO = 200.00'
DS = 70 mph

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

WEYERHAUSER COMPANY
DB 370 - PG 53
DB 370 - PG 57
MB 1 - PG 220
8

SEE PROJECT COMMITMENTS
FOR SPECIAL CLEARING FOR
-L- STA. 338+00 TO 393+00

MATCH LINE STA. 380+00

MATCH LINE STA. 394+00

380 385 390

+18.49 -L- 100.00' LT
+14.49 -L- 100.00' LT
+00.00 -L- 100.00' LT 125.00' LT

CHORD
50.00' TYP
WOODS
8:1 CAT-1
10' PS
24' PS
4' PS
12' PS
200' RW
250' RW

N 38° 07' 28.3" W
-L-
-BL-65
-BL-66
-BL-67
2GI (270)
2GI (2750)
FS SEE DETAIL B

10'R
BEGIN WW FENCE
END WW FENCE
+87 -L- PROP RW
2704 CL I RIP RAP EST. 15 TONS EST. 30 SY GF
MAINTAIN EXISTING DITCH
+40 -L- 158' RT
30' -L- PROP RW
36" RCP-IV
30dd
PDE
TDE
+56 -L- 181' RT
+95 -L- 200' RT
REM
+12 -L- 185' RT
MAINTAIN EXISTING DITCH
TIE TO EXISTING DITCH
G8 - GATED ENCROACHMENT SEE X-212 FOR GRADE 12' PAVED W/2' SHLD

2702 CL B RIP RAP EST. 1 TON EST. 5 SY GF
+18.49 -L- 100.00' RT
+14.49 -L- 100.00' RT
2751 CL B RIP RAP EST. 1 TON EST. 5 SY GF
+00.00 -L- 100.00' RT 125.00' RT
2706
36"x54" EQUIVALENT PIPE

-L- TS Sta. 387+18.49
-L- SC Sta. 390+14.49
BMI9

No change meeting NCDOT 01/23/2020

address change fi

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE SHEET 62 FOR PROFILE -L-

19-NOV-2018 10:25
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$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

-L-
PIs Sta 456+23.60 PI Sta 466+31.56
Θs = 8°07'07.0" Δ = 45°20'08.3" (RT)
Ls = 558.00' D = 2°54'35.6"
LT = 372.39' L = 1,557.98'
ST = 186.36' T = 822.35'
R = 1,969.00'
SE = 0.100
RO = 500.00'
DS = 70 mph

NAD 83

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 1550 - PG 641
PC "F" - SLIDE 174E
13

R. GRAHAM WILLIAMS, et ux
DB 1540 - PG 350
10

BOLING FAMILY INVESTMENTS, L.L.C., et al
DB 796 - PG 303
DB 1742 - PG 825
11

CLYDE O. BELANGIA, JR., et al
DB 675 - PG 400
12

N 62°30'08" E
3555.43'

N 62°30'08" E
3555.43'

450

455

460

address in file

REM

REM

BM 4

END WW FENCE

+09.21 -L-
125.00' LT

HW
SEE SPECIAL DETAIL
(SHEET 2C-2)

BEGIN WW FENCE

+51.21 -L-
125.00' LT

CHORD
50.00'
TYP

CL B RIP RAP
EST. 1 TONS
EST. 5 SY GF

84" RCP-IV,
BURIED 1'

15" RCP-IV

FS
SEE DETAIL B

-BL-79

-BL-78

-L-
N 29°51'36.9" W

FS
-BL-77 2GI-D SEE DETAIL B

MEDIAN 'V' DITCH
SEE DETAIL NN

CL I RIP RAP
EST. 26 TONS
EST. 50 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL I RIP RAP
EST. 57 TONS
EST. 104 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

+51.21 -L-
125.00' RT

+09.21 -L-
125.00' RT

-L- TS Sta. 452+51.21

-L- SC Sta. 458+09.21

MATCH LINE STA. 450+00

MATCH LINE STA. 464+00

BOLING FAMILY INVESTMENTS, L.L.C., et al
DB 796 - PG 303
DB 1742 - PG 825
11

CLYDE O. BELANGIA, JR., et al
DB 675 - PG 400
12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 1550 - PG 641
PC "F" - SLIDE 174E
13

SEE SHEETS 65 FOR PROFILE -L-

19-NOV-2018 10:27
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
NO DEED REFERENCE
SEE CROATAN PURCHASE TRACT 16c
2

NAD 83

MATCH LINE STA. 492+00

MATCH LINE STA. 505+00

-G12- POT Sta. 10+00.00
-L- POT STA 495+50.00

CP & L RIGHT OF WAY
NO REFERENCE

REPLACE EXISTING POLE
DUKE ENERGY

REPLACE EXISTING POLE
DUKE ENERGY

REPLACE EXISTING POLE
DUKE ENERGY

REM

-BL-577
15" RCP-III
-BL-578
-BL-579
-BL-580

N 31° 42' 45.4" E

N 34° 00' 45.4" E

S 58° 17' 14.6" E

S 35° 24' 49" E

-G12- PC Sta. 10+89.96

-G12- PT Sta. 11+39.84

-G12- POT Sta. 13+83.11

-L- POT Sta. 504+56.80 =
-RP2C- POT Sta. 0+00.00 (47' RT)
△ = 2° 18' 00"

RR -EY3- POT Sta. 16+92.14

-BY2-584

G12 - GATED ENCROACHMENT
SEE X-249
12' PAVED/GRAVEL W/2' SHLD

END PAVING
-G12- STA 11+92.50

END CONSTRUCTION

WTO extended

-G12-
PI Sta 11+17.19
△ = 57° 09' 19.6" (LT)
D = 114° 35' 29.6"
L = 49.88'
T = 27.24'
R = 50.00'
SE = NC

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL I RIP RAP
EST. 13 TONS
EST. 30 SY GF

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

CL I RIP RAP
EST. 10 TONS
EST. 23 SY GF

BEGIN GRADE
G12 STA 10+89.00

15" CAAP W/ELBOWS

TB 2GI

GREU (TL-3)

TYPE B-77

EXIST RR R/W
150.00' RT -L-

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 1550 - PG 641
PC "F" - SLIDE 174E
13

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
NO DEED REFERENCE
SEE CROATAN PURCHASE TRACT 16c
2

SEE SHEET 66 FOR PROFILE -L-
SEE SHEET 85 FOR PROFILE -RP2C-
SEE SHEET 91 FOR PROFILE -G12-

19-NOV-2018 10:30
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$$$$USERNAME$$$$

REVISIONS

CULVERTS:
PARCEL 1 - NEW PARCEL NUMBER
PARCEL 2 - ADDED RW WIDTH -RP2C- STAN 19
PARCEL 3 - ADDED RW WIDTH -RP2C- STA 19 TO 21+15 RT
PARCEL 4 - REVISED RW WIDTH -RP2C- STA 21+15 TO 23+00 RT
PARCEL 5 - REVISED RW WIDTH -RP2C- STA 23+00 TO 24+00 LT
PARCEL 6 - ADDED RW WIDTH -RP2C- STA 24+00 TO 25+00 LT
PARCEL 7 - ADDED RW WIDTH -RP2C- STA 25+00 TO 26+00 LT
PARCEL 8 - ADDED RW WIDTH -RP2C- STA 26+00 TO 27+00 LT
PARCEL 9 - ADDED RW WIDTH -RP2C- STA 27+00 TO 28+00 LT
PARCEL 10 - REVISED RW WIDTH -SERVRD- 31+09 TO 31+32 RT

-L- PI Sta 512+14.38 Δ = 2° 14' 23.6" Ls = 295.00' LT = 196.68' ST = 98.35'
-L- PI Sta 520+78.98 Δ = 22° 52' 38.8" (LT) D = 1° 31' 08.9" L = 1,542.00' T = 766.28' R = 3,773.00' SE = 0.050 RO = 196.67' DS = 60 mph
-L- PI Sta 529+23.04 Δ = 2° 14' 23.6" Ls = 295.00' LT = 196.68' ST = 98.35'

-RP2C- PI Sta 4+57.45 Δ = 14° 53' 37.9" Ls = 196.00' LT = 131.13' ST = 65.76'
-RP2C- PI Sta 9+78.85 Δ = 107° 54' 01.9" (RT) D = 15° 11' 52.2" L = 663.59' T = 456.53' R = 377.00' SE = 0.070 RO = 140.00' DS = 30 mph
-RP2C- PI Sta 12+60.50 Δ = 2° 08' 59.9" Ls = 147.54' 52.8' Ls = 196.00' LT = 121.03' ST = 74.27'

-RP2CD- PI Sta 0+12.02 Δ = 0° 31' 10.3" (LT) D = 2° 09' 40.6" L = 240.4' T = 120.2' R = 2,650.00' SE = 0.040 RO = 144.00' DS = 50 mph
-RP2CD- PI Sta 2+51.04 Δ = 1° 34' 17.5" Ls = 144.00' LT = 96.00' ST = 48.00'
-RP2CD- PI Sta 3+97.62 Δ = 4° 18' 05.6" (RT) D = 2° 07' 57.7" L = 191.01' T = 95.58' R = 2,625.00' SE = 0.040 RO = 144.00' DS = 50 mph
-RP2CD- PI Sta 5+44.12 Ls = 1° 34' 17.5" Ls = 144.00' LT = 96.00' ST = 48.00'
-RP2CD- PI Sta 17+43.86 Ls = 1° 34' 17.5" Ls = 144.00' LT = 96.00' ST = 48.00'
-RP2CD- PI Sta 18+79.90 Δ = 3° 50' 30.1" (RT) D = 2° 11' 57.7" L = 176.0' T = 88.04' R = 2,625.00' SE = 0.040 RO = 144.00' DS = 50 mph
-RP2CD- PI Sta 20+15.87 Ls = 1° 34' 17.5" Ls = 144.00' LT = 96.00' ST = 48.00'

-RP2AC- PI Sta 53+05.42 Ls = 1° 01' 17.5" Ls = 245.00' LT = 163.34' ST = 81.67'
-RP2AC- PI Sta 56+34.40 Ls = 2° 42' 23.6" Ls = 248.00' LT = 165.35' ST = 82.68'
-RP2AC- PI Sta 61+13.33 Δ = 11° 13' 54.2" (LT) D = 2° 10' 57.7" L = 787.18' T = 396.56' R = 2,625.00' SE = 0.040 RO = 200.00' RO = 152.00' DS = 50 mph
-RP2AC- PI Sta 65+86.61 Ls = 2° 42' 23.6" Ls = 248.00' LT = 165.35' ST = 82.68'
-RP2AC- PI Sta 71+62.67 Ls = 5° 18' 01.4" Ls = 241.00' LT = 164.74' ST = 82.40'
-RP2AC- PI Sta 75+99.31 Δ = 29° 05' 25.4" (RT) D = 4° 17' 30.5" L = 677.31' T = 346.58' R = 1,335.00' SE = 0.065 RO = 241.00' DS = 50 mph

-RP2A- PI Sta 82+50.73 Δ = 27° 09' 23.2" (RT) D = 4° 13' 08.9" L = 643.65' T = 327.99' R = 1,358.00' SE = 0.065 RO = 241.00' DS = 50 mph
-RP2A- PI Sta 86+48.79 Δ = 5° 12' 38.3" Ls = 241.00' LT = 164.74' ST = 82.40'

-LP2A- PI Sta 80+54.56 Δ = 15° 09' 01.2" Ls = 241.00' LT = 163.34' ST = 81.67'
-LP2A- PI Sta 86+02.03 D = 24° 35' 25.7" L = 196.85' T = 99.68' R = 233.00' SE = 0.080 RO = 160.00' DS = 30 mph
-LP2A- PI Sta 87+25.36 Δ = 15° 09' 40.7" (RT) D = 4° 35' 29.7" L = 468.29' T = 235.29' R = 1,250.00' SE = 0.080 RO = 160.00' DS = 30 mph
-LP2A- PI Sta 87+25.36 Ls = 1° 54' 26.3" Ls = 210.00' LT = 137.69' ST = 75.71'

PROJECT REFERENCE NO. R-5125 | SHEET NO. NE-11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Hoffman & Hibbard
ALL PLANS AS NOTED ABOVE SIGNED AND SEALED BY THE ENGINEER LISTED ON THE TITLE SHEET ON 12/16/2016

MATCH LINE STA. 505+00
MATCH LINE STA. 86+80
MATCH LINE STA. 56+00 -RP2AC
MATCH LINE STA. 533+50

-L- POT Sta. 506+32.85 = RR -EY1- POT Sta. 13+82.59 Δ = 12° 50' 25.4" (RT) R = 450.00'
RR -EY1- POT Sta. 10+00.00
-RP2C- POT Sta. 1+49.52 = RR -EY1- POT Sta. 13+70.30 Δ = 109° 54' 25.4"
-RP2C- TS Sta. 3+26.32
-RP2C- SC Sta. 5+22.32
-RP2C- CS Sta. 6+53.93
-RP2C- ST Sta. 8+19.62
-RP2C- CS Sta. 11+86.23
-RP2C- SC Sta. 13+82.23
-RP2C- TS Sta. 15+58.23
-RP2C- ST Sta. 17+24.93
-RP2C- PC Sta. 19+22.74 = -RP2AC- PC Sta. 79+22.74 (23' LT)
-RP2AC- PT Sta. 82+44.93
-RP2AC- TS Sta. 69+19.93
-RP2AC- SC Sta. 67+53.93
-RP2AC- ST Sta. 67+45.93
-RP2AC- CS Sta. 65+03.93
-RP2AC- SC Sta. 61+86.23
-RP2AC- TS Sta. 60+19.93
-RP2AC- ST Sta. 58+53.93
-RP2AC- SC Sta. 56+36.23
-RP2AC- TS Sta. 54+69.93
-RP2AC- ST Sta. 53+03.93
-L- PC Sta. 516+57.37 = -RP2AC- POT Sta. 69+02.79 Δ = 106° 47' 27.6"
-L- SC Sta. 513+12.69
-L- POT Sta. 510+11.69
-L- PC Sta. 506+32.85 = -RP2C- POT Sta. 1+49.52
-L- SC Sta. 513+12.69
-L- ST Sta. 514+50.69
-L- PC Sta. 516+57.37 = -RP2AC- POT Sta. 69+02.79 Δ = 106° 47' 27.6"
-L- SC Sta. 519+08.21 = -LP2A- ST Sta. 88+59.59
-L- CS Sta. 528+28.21
-LP2A- CS Sta. 86+49.59
-L- ST Sta. 534+69.62
-RP2A- PC Sta. 79+22.74 = -RP2AC- PC Sta. 79+22.74 (23' LT)
-RP2A- CS Sta. 85+66.39
-RP2A- SC Sta. 86+53.74
-LP2A- ST Sta. 79+22.74 = -RP2AC- PT Sta. 79+22.74 (23' RT)
-SERVRD- PC Sta. 32+80.64
-SERVRD- PI Sta. 34+81.54
-SERVRD- PT Sta. 35+81.54

BEGIN GRADE -RP2C- STA. 2+75.00
2 @10'x8' RCBC
PROTECTED AREA
flat, mixed hardwood swamp with small pockets of upland NE.
GRADE TO DRAIN
BEGIN WW FENCE
END WW FENCE
REMOVE OLD BRIDGE DECK AND WW FENCE
ATLANTIC & EAST CAROLINA RAILROAD
DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST
DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST NO DEED REFERENCE SEE CROATAN PURCHASE TRACT 15a
JOHN TYLER JACKSON DB 2673 PG 576 PC "K" SLIDE 17-D
JOHN A. JACKSON DB 778 PG 317
JOANN COBAN TADLOCK DB 942 PG 569
DONALD KOONTZ DB 540 PG 139
NEIL BAKER DB 734 PG 74
NEIL BAKER DB 766 PG 163
ELIS B. SALTER DB 55 PG 496
WILLIAM L. LUZADDER DB 99 PG 329 MB 3 PG 29
Z-22 LLC DB 2495 PG 359 TRACT 43-7
CITY OF NEW BERN OVERHEAD POWER LINE
OVERHEAD POWER LINE AND COMMUNICATION LINE
OVERHEAD POWER LINE
REPLACE EXISTING POLE
UNDERGROUND COMMUNICATION LINE
OVERHEAD POWER LINE
OVERHEAD POWER LINE AND COMMUNICATION LINES
OVERHEAD POWER LINE
REM
SEE SHEETS 85 AND 86 FOR PROFILE -RP2C-
SEE SHEETS 87 AND 88 FOR PROFILE -RP2AC-
SEE SHEETS 90 FOR PROFILE -LP2A-
SEE SHEETS 84 FOR PROFILE -RP2A-
SEE SHEETS 89 FOR PROFILE -RP2CD-
SEE SHEETS 92 FOR PROFILE -SERVRD-

LOCATION: US 70 (HAVELOCK BYPASS) FROM SR 1172 (CHERRY POINT) CRAVEN COUNTY LINE TO SOUTH OF SR 1176 (CAROLINA PINES BLVD)
TIP NO.: R-5125 | COUNTY: CRAVEN
DESIGNED BY: DGN
CHECKED BY: TSR | DATE: 6 /18 /2018
GRAPHIC SCALE 50 25 0 50 100 PLANS

RUNNING ON: 2017-2018 XDOT\...\R5125_NE_NE11.dgn

8/17/99

DERRICK HIMAN (SPRINT) AT 919-637-6952 FOR ADDT'L. INFO.

MATCH LINE -RP2A STA. 86+80

MATCH LINE STA. 533+50

MATCH LINE STA. 547+00

-RP2A- SRS Sta. 88+13.39

-RP2A- SC Sta. 90+60.39

-RP2A- CS Sta. 95+46.25

-RP2A- ST Sta. 97+93.75 = -L- ST Sta. 543+98.84 (38° RT)

-L- PC Sta. 538+03.08

-L- PI Sta. 538+49.81

-L- N 6° 17' 26.6" E

-SERVRD- PC Sta. 90+29.30

-SERVRD- PI Sta. 94+22.23

-SERVRD- N 6° 47' 56.3" E

-RP2A-
PIs Sta 86+48.79 Gs = 5°12'38.3" Ls = 247.00' LT = 164.74' ST = 82.40'
PIs Sta 89+78.13 Gs = 5°12'38.3" Ls = 247.00' LT = 164.74' ST = 82.40'
PI Sta 93+06.20 Δ = 20°31'11.8" (LT) D = 4°13'08.9" L = 486.35' T = 245.81' R = 1,358.00' SE = 0.065 RO = 247.00' DS = 50 mph
PIs Sta 96+29.15 Gs = 5°12'38.3" Ls = 247.00' LT = 164.74' ST = 82.40'

-L-
PI Sta 536+76.49 Δ = 2°01'07.3" (RT) D = 0°34'55.5" L = 346.80' T = 173.42' R = 9,843.00' SE = 0.025 RO = 125.00' DS = 60 mph

-L-
PI Sta 534+31.23 Δ = 5°59'49.2" (RT) D = 1°59'44.4" L = 300.50' T = 150.39' R = 2,871.00' SE = NC DS = 30 mph
PI Sta 541+28.27 Δ = 1°23'00.5" (RT) D = 0°41'56.3" L = 197.93' T = 98.97' R = 8,197.00' SE = NC DS = 30 mph
PI Sta 543+20.57 Δ = 2°33'39.8" (LT) D = 1°14'50.9" L = 205.08' T = 102.56' R = 4,593.00' SE = NC DS = 30 mph

-SERVRD-

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
NO DEED REFERENCE
SEE CROATAN PURCHASE TRACT 62n

JOANN COWAN TADLOCK DB 942 PG 569 (23)
ROYCE B. DAW DB 462 PG 325 (25)
BILLY ROBERT BRIDGEWATER DB 1025 PG 568 (26)
WALTER J. KINCAID DB 805 PG 727 (27)
NEIL BAKER DB 734 PG 74 (22)
ELIS B. SALTER DB 515 PG 496 (21)
THOMAS AVON GRIFFIN DB 1276 PG 81 (24)
LAURIE RENNIE WYNNE DICKERSON DB 1205 PG 722 PC E SLD 188 (28) (28Z)
WILLIAM D. WYNNE, et ux DB 2653 PG 481 PC H Slide 83F (29)
JEFFREY A. WYNNE DB 2653 PG 478 PC H Slide 83F (31)

OVERHEAD POWER LINE AND COMMUNICATION LINE

UNDERGROUND COMMUNICATION LINE

CITY OF NEW BERN OVERHEAD POWER LINE

OVERHEAD POWER LINE AND COMMUNICATION LINES

field verified +ream present '2018

SEE SHEET 68 FOR PROFILE -L-
SEE SHEET 84 FOR PROFILE -RP2A-
SEE SHEET 92 AND 93 FOR PROFILE -SERVRD-

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4744 FAX
NC LICENSE NO. F-0105

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

R-1015_NE18_Engineering\NEU\r-1015_rdy37_NE18.psh.dgn
12-NOV-2018 10:37
$$$$USERNAME
$$$$DESIGNER

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No. F-0105

-L-
PIs Sta 548+94.45
θs = 0° 38' 46.1"
Ls = 148.00'
LT = 98.67'
ST = 49.33'

PI Sta 555+33.32
Δ = 10° 16' 02.6" (LT)
D = 0° 52' 23.3"
L = 1,175.91'
T = 589.53'
R = 6,562.00'
SE = 0.025
RO = 150.00'
DS = 60 mph

-SERVEXT-
PI Sta 18+96.44
Δ = 8° 19' 25.3" (LT)
D = 1° 54' 35.5"
L = 435.83'
T = 218.30'
R = 3,000.00'
SE = NC
DS = 30 mph

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

-L- TS Sta. 547+95.79
-L- SC Sta. 549+43.79
-SERVEXT- POT Sta. 10+00.00
-SERVEXT- PC Sta. 16+78.15
MATCH LINE STA. 547+00
MATCH LINE STA. 561+00
550
555
560

UNKNOWN OWNER

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL QQ
300' TAPER
+38.00 -L- 118.99' LT END WW FENCE
+67.00 -L- 85.00' LT
CL B RIP RAP EST. 5 TONS EST. 14 SY GF
STANDARD 2' BASE DITCH SEE DETAIL RR DDE=13 C.Y.
SPECIAL LATERAL 'V' DITCH SEE DETAIL R
+30 -L- PROP R/W 235' LT
+54.00 -L- 177.00' LT 226.00' LT
+72 PROP R/W 235' LT
+38.00 -L- 226.00' LT
TDE
+54 -L- 190' LT
-G13- ACCESS PT CUL-DE-SAC TURN AROUND 35' RADIUS 3' SHOULDERS CENTER EL = 31.45'
20' R
+00 -L- 200' LT
+00 -L- 194' LT
+95 PROP R/W 175' LT
+25 PROP R/W 170' LT
+16.00 -L- 152.00' LT
+66.59 -L- EXIST R/W
EXIST P.I. PROP R/W 153' LT
EIP w/ CAP
N 60°20'10" W 247.31'
38
-SERVEXT- N 3°09'46.6" E
24" RCP-IV
18" RCP-IV
15" RCP
12"
20'
15'
PDE
3809
3810
3811
3812
3813
3818
CL-B RIP RAP EST. 3 TONS EST. 10 SY GF
MEDIAN 'V' DITCH SEE DETAIL NN
REMOVE
-L- RL -595
N 6°17'26.6" E
15" RCP-III
18" RCP-III
24" RCP-III
2GI
2GI-D
TB 2GI
FS SEE DETAIL B
-L- RL -596
US 70
245' BST
45' BST
END PROP. EXPRESSWAY GUTTER -L- STA. 552+78.50
780' TAPER
-SERVRD- N 3°14'26.6" E
79.36' RT
79.07'
RETAIN
RETAIN EXIST R/W
EXISTING 18" RCP PIPE CLEANOUT
EXISTING 12"RCP PIPE CLEANOUT
REM
PUE
PROP O/H POW & COMMUN LINES
EXIST P.I. EXIST R/W
EXIST P.I. 162' RT -L-
EXIST P.I. 182' RT -L-
EXIST P.I. 153' RT -L-
+00 -L- 162' RT 182' RT
+74.26 -SERVRD- 40.00' RT
+74.26 -SERVRD- 30.99' RT
+42 -SERVRD- PROP PUE
+23.09 -SERVRD- 40.00' RT
+96.13 -L- 86.22' RT
+70 -SERVRD- PROP PUE
+79 -SERVRD- 67' RT
+77 -SERVRD- 52' RT
+37 -SERVRD- 52' RT 72' RT
SPECIAL LATERAL 'V' DITCH SEE DETAIL S
DITCH CLEANOUT (20 FT)
SPECIAL LATERAL 'V' DITCH SEE DETAIL R
-SERVRD- PC Sta. 52+18.01
-SERVRD- PT Sta. 54+23.09
-SERVRD- POT Sta. 56+74.26
LEROY SMITH DB 630 PG 31
36
BLK S
C.O. BELANGIA DB 425 PG 457
FOREST
S 84°45'34" E 402.39'
N 89°45'58" W 180.96'
N 75°40'43" E 50.00'
N 13°33'50" E 50.00'
S 75°41'26" W 534.50'
S 75°23'45" W 590.56'
N 89°10'07" W 162.50'
N 89°10'07" W 237.60'
S 89°45'58" E 96.36'
S 89°45'58" E 132.00'
S 75°52'50" E 3,555.52'

UNDERGROUND COMMUNICATION LINE

OVERHEAD POWER LINE AND COMMUNICATION LINE

OVERHEAD POWER LINE AND COMMUNICATION LINES

RICKY E. DICKERSON DB 1522 PG 914
34 34Z
JEFFREY A. WYNNE DB 2653 PG 478 PC H Slide 83F
31
RICKEY E. DICKERSON DB 1232 PG 110
35 35Z
DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST NO DEED REFERENCE SEE CROATAN PURCHASE TRACT 62n
2
DAVID ARLIN TIVNAN DB 1336 PG 1023
37
MAGGIE M. SMITH DB 1447 PG 726
63
DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST NO DEED REFERENCE SEE CROATAN PURCHASE TRACT 62n

SEE SHEET 68 FOR PROFILE -L-
SEE SHEET 93 FOR PROFILE -SERVRD-
SEE SHEET 93 FOR PROFILE -SERVEXT-

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PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No. F-0105

REVISIONS

8/17/99 –

8/14/2018 – PARCELS 40 & 41 – REMOVED PUE
PARCELS 40 & 41 – ADDED TCE

7/13/2018 – PARCEL 1 – ADDED TCE STATION –RPICD– 24+20 TO 33+70 RT
REMOVED PUE STATION –RPICD– 32+98 TO 33+70 RT
PARCEL 5 – ADDED TCE STATION –RPICD– 32+98 TO 33+70 RT
PARCEL 40, 41 – ADDED TCE AND STARTED RW STATION –RPICD– 36+39.40 RT
PARCEL 41 – CHANGED CA TO RW

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–RPIA–
PIs Sta 1+27.46
Θs = 1° 56' 40.7"
Θs = 17° 29' 42.6"
Ls = 200.00'
LT = 127.46'
ST = 74.24'

PI Sta 6+08.39
Δ = 102° 27' 39.0" (RT)
D = 17° 28' 05.6"
T = 408.39'
R = 328.00'
SE = 0.08
RO = 200.00'
DS = 35 mph

–RPIAB–
PIs Sta 18+57.70
Θs = 2° 14' 27.6"
Ls = 231.00'
LT = 154.01'
ST = 77.01'

PI Sta 21+15.30
Δ = 7° 00' 00.0" (LT)
D = 1° 56' 24.9"
L = 360.78'
T = 180.61'
R = 2,953.00'
SE = 0.035
RO = 144.00'
DS = 50 mph

PIs Sta 23+72.47
Θs = 2° 14' 27.6"
Ls = 231.00'
LT = 154.01'
ST = 77.01'

PIs Sta 29+95.29
Θs = 2° 17' 30.6"
Ls = 200.00'
LT = 133.34'
ST = 66.68'

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
1

MATCH LINE –RP1A– STA. 4+00

MATCH LINE –RP1AB– STA.15+00

MATCH LINE –RP1AB– STA.29+00

MATCH LINE –RP1CD– STA. 23+60

–RPIA– ST Sta. 0+00.00 =
–RPIAB– ST Sta. 22+04.84 (47' LT)

–RPIA– SC Sta. 2+00.00

–RPIAB– CS Sta. 22+95.46

–RPIAB– ST Sta. 25+26.46

–RPIAB– TS Sta. 28+61.95

–RPIAB– TS Sta. 17+03.69

–RPIAB– SC Sta. 19+34.69

+00.00 –RP1A– 75.00' RT

+00.00 –RP1A– 75.00' RT

+95.46 –RPIAB– 125.00' LT

+26.46 –RPIAB– 125.00' LT

+56.38 –RPIAB– 125.00' LT

CARTERET-CRAVEN OVERHEAD POWER LINE

CARTERET-CRAVEN OVERHEAD POWER LINE

ABANDON

300' MEDIAN TRANSITION

360.78' MEDIAN AND LANE TRANSITION

CL I RIP RAP EST. 15 TONS EST. 30 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

SPECIAL CUT 8' BASE DITCH SEE DETAIL QQQ

SPECIAL CUT 8' BASE DITCH SEE DETAIL A

SPECIAL CUT 8' BASE DITCH SEE DETAIL OOO

SPECIAL CUT 5' BASE DITCH SEE DETAIL MMM

TIE TO EXISTING CHANNEL

FILL EXISTING CHANNEL

REMOVE SYSTEM

REMOVE APPROX. 12' OF PIPE TO OUTLET AT BASE OF DITCH

N 43° 19' 42.6" W

N 51° 08' 32.8" W

S 44° 05' 55" E 200.00'

S 44° 05' 55" E 951.37'

S 44° 05' 55" E 986.99'

S 9.66'

S 44° 43' 14" E

S 44° 43' 36" E

–RPICD– PT Sta. 36+93.06
–RPIAB– Sta. 28+39.21 (23.50' RT)

ARMISTEAD PROPERTIES, LLC.
DB 1936 PG 335

MARINE FEDERAL CREDIT UNION
DB 1765 PG 449

CHANNELOCK CITY LIMIT

–RPICD– TS Sta. 31+48.92

–RPICD– SC Sta. 33+79.92

OVERHEAD POWER LINE AND COMMUNTION LINS

UNDERGROUND COMMUNICATION LINE

OVERHEAD POWER AND COMMUNICATION LINES

UNDERGROUND COMMUNICATION LINE

REPLACE EXISTING POLE

–RPICD–
PIs Sta 33+02.93
Θs = 2° 06' 19.9"
Ls = 231.00'
LT = 154.01'
ST = 77.01'

PI Sta 35+36.61
Δ = 5° 42' 30.3" (RT)
D = 1° 49' 22.7"
L = 313.14'
T = 156.70'
R = 3,143.00'
SE = 0.04
RO = 231.00' (144.00')
DS = 50 mph

SEE SHEET 73 FOR PROFILE –RPIAB–
SEE SHEET 76 AND 77 FOR PROFILE –RPICD–
SEE SHEET 71 FOR PROFILE –RPIA–

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NC License NO.: F-0105

REVISIONS

8/17/99 -

7/13/2018 - PARCEL 41 - REVISED RW STATION -RPICD- 29+00 TO 30+25 RT
PARCEL 41 - CHANGED CA TO RW
PARCELS 42 & 43 - REVISED RW STATION -RPIAB- 35+00 TO 40+00 RT
PARCELS 41 & 42 - REVISED TCE STATION -RPIAB- 35+00 TO 35+77 LT
PARCEL 54 - NEW PARCEL NUMBER, ADDED TCE STATION -RPIAB- 37+90 TO 38+30 LT

8/14/2018 - PARCELS 41, 42, 43, 44 & 45 - REMOVED PUE
PARCEL 41 - ADDED TCE

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-RPIAB-
PIs Sta 29+95.29 PI Sta 35+60.90
Θs = 2° 17' 30.6" Δ = 22° 34' 25.3" (RT)
Ls = 200.00' D = 2° 17' 30.6"
LT = 133.34' L = 984.96'
ST = 66.68' T = 498.95'
R = 2,500.00'
SE = 0.040
RO = 200.00'
DS = 50 mph

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
1

HAVELOCK CITY LIMIT
CITY OF HAVELOCK
DB 983 PG 598

COMMUNITY CHRISTIAN FELLOWSHIP, INC.
DB 1040 - PG 365
5133.853 SQ M (CADD)

FIRST FLIGHT FEDERAL CREDIT UNION
DB 1567 PG 26
55

NATIONAL RETAIL PROPERTIES, LP
DB 3293 PG 370
54

NAD 83

CARTERET-CRAVEN OVERHEAD POWER LINE

CARTERET-CRAVEN OVERHEAD POWER LINE

ABANDON

REM

MATCH LINE -RP1AB- STA 29+00

MATCH LINE -RP1AB- STA 40+00

-RP1AB- SC Sta. 30+61.95

+91.34 -RP1AB- 122.51' LT

+02.66 -RP1AB- 104.65' LT

+01.72 -RP1AB- 59.30' LT EXIST R/W

+01.92 -RP1AB- 99.84' LT

END WW FENCE

BEGIN WW FENCE

+77.00 -RP1AB- 80.00' LT EXIST R/W

+30 -RP1AB- 80.00' LT EXIST R/W

EXIST R/W 90.00' LT -RP1AB-

RETAIN SYSTEM

FIELD ADJUST EXISTING DI TOP ELEVATION TO PROP. FILL SLOPE ELEVATION

REMOVE SYSTEM

CONVERT BLIND JB TO JB W/MH

REMOVE EXIST. 24" RCP

REMOVE EXIST. 7'x5' CMP

REMOVE DI AND 18" CMP

REMOVE APPROX. 2'+/- OF 15" HDPE TO PUE

PROP DI

MIN. DEPTH DI SEE SPECIAL DETAIL (SHEET 2C-3)

INNERDUCT

EXIST R/W 100' LT -RP1AB-

RETAIN 15" RCP

DITCH CLEAN OUT FROM OUTLET OF 15" RCP TO INLET OF 36" RCP

CL B RIP RAP EST. 8 TONS EST. 21 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

SPECIAL CUT 5' BASE DITCH SEE DETAIL NNN

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

HAVELOCK HWY 70, LLC.
DB 3147 PG 568
42
(NO CLAIM)

UNDERGROUND COMMUNICATION LINE

OVERHEAD COMMUNICATION LINE

JOEL R. BANKS
DB 1427 - PG 618
3682.654 SQ M (DEED)
43
(NO CLAIM)

WADE CARY ENTERPRISES, INC.
DB 1155 - PG 1127
2821 SQ M (CADD)
44
(NO CLAIM)

EL CERRO GRANDE #6, INC.
DB 2119 PG 407
PC "G" SLIDE 6C
45
(NO CLAIM)

MARINE FEDERAL CREDIT UNION
DB 1765 PG 449
41

DANIEL G. KAMIN HAVELOCK ENTERPRISES
DB 1522 - PG 851

PEDESTALS WILL BE RELOCATED TO CLEAR FOR CONSTRUCTION

SEE SHEETS 74 FOR PROFILE -RPIAB-

PROJECT REFERENCE NO.	SHEET NO.
R-1015	21A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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moffatt & nichol
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NC License No. F-0105

REVISIONS

8/17/99 -RPIAB- 40+00 TO 40+74 RT -RPIAB- 41+65 TO 42+74 LT
PARCEL 45 - REMOVED RW STATION -RPIAB- 40+00 TO 40+74 RT -RPIAB- 41+65 TO 42+74 LT
PARCEL 55 - NEW PARCEL NUMBER, ADDED RW, ADDED RW,TCE,AND PDE STATION -RPIAB- 42+74 TO 43+59 LT
PARCEL 56 - NEW PARCEL NUMBER, ADDED RW, ADDED RW,TCE,AND PDE STATION -RPIAB- 42+74 TO 43+59 LT

7/13/2018 - PARCELS 45 & 46 - REMOVED TUE

8/14/2018 -

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NAD 83

-RPIAB-
PI Sta 35+60.90
△ = 22° 34' 25.3" (RT)
D = 2° 17' 30.6"
L = 984.96'
T = 498.95'
R = 2,500.00'
SE = 0.040
RO = 200.00'
DS = 50 mph

PIs Sta 41+13.59
Θs = 2° 17' 30.6"
Ls = 200.00'
LT = 133.34'
ST = 66.68'

-RPIAB- STA 40+00

MATCH LINE -RP1AB-

-RPIAB- CS Sta. 40+46.91

-RPIAB- ST Sta. 42+46.91

-RPIAB REV- POT Sta. 51+95.74

FIRST FLIGHT FEDERAL CREDIT UNION
DB 1567 PG 26
55

4 SISTERS-00, LLC
DB 1210 PG 343
56

CWS HOLDINGS, LLC
DB 2905 PG 867
MB 2200 PG 142

MAHENDRA G. PATEL, ET UX
DB 1346 PG 334

C.G.W., INC.
DB 2411 PG 600

QUICKER CARE PROPERTIES, LLC
DB 3264 PG 292

CRAVEN COUNTY ALCOHOLIC BEVERAGE CONTROL BOARD
DB 917 PG 248
DB 2543 PG 429

END PAVING US 70 BUS
END CONSTRUCTION US 70 BUS
-RPIAB- POT STA 45+00.00

FIELD ADJUST EXISTING DI TOP ELEVATION TO PROP. FILL SLOPE ELEVATION

REMOVE EXIST. 15" RCP

+00.00 -RP1AB- 97.00 LT

+61 -RP1AB- 102' LT PROP R/W

+84 -RP1AB- 102' LT PROP R/W

+00.00 -RP1AB- 85.00' LT EXIST R/W

+46.91 -RP1AB- 85.00' LT

+58.99 -RP1AB- 85.00' LT EXIST R/W

+65.00 -RP1AB- EX R/W

RETAIN SYSTEM

REMOVE SYSTEM

SKYLINE 81 GLOBE INVESTORS, LLC
DB 3355 PG 441

PNF REALTY, LLC
DB 1742 PG 67

VETERINARY FACILITIES LLC
DB 2799 PG 621

BOB HILL ENTERPRISES, INC.
DB 1019 PG 510

McDONALD'S REAL ESTATE COMPANY
DB 3375 PG 725

MARCUS BOWMAN
DB 2134 PG 910

EL CERRO GRANDE #6, INC.
DB 2119 PG 407
PC "G" SLIDE 6C
45
(NO CLAIM)

BOB HILL ENTERPRISES, INC.
PC "G" SLIDE 6-C
DB 1347 PG 1092
46
(NO CLAIM)

OVERHEAD COMMUNICATION LINE

SEE SHEETS 74 AND 75 FOR PROFILE -RPIAB-

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NC License No. F-0105

REVISIONS

8/17/99

8/14/2018 - PARCEL 4 - REVISED DUE AND PUE STATION -Y3- 40+73.50 RT
PARCEL 4 - REVISED TCE STATION -Y3- 44+00 TO 45+25 RT

7/13/2018 - PARCEL 4 - ADDED TCE STATION -Y3- 33+45 TO 45+00 RT
PARCEL 4 - CHANGED TCE TO PDE AND REVISED AREA
PARCEL 4 - REVISED TCE STATION -Y3- 39+90 TO 41+15 RT
PARCEL 4 - REVISED TCE STATION -Y3- 34+45 TO 45+00 LT
PARCEL 4 - ADDED PDE STATION -Y3- 38+50 TO 45+00 LT

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WEYERHAEUSER COMPANY
DB 1048 - PG 1014
4

NAD 83

-Y3- POT Sta. 32+80.83

BEGIN CONSTRUCTION
-Y3- STA. 34+77.69

REPLACE EXISTING POLE

CARTERET-CRAVEN OVERHEAD POWER LINE

TIE PROP. DITCH TO EXIST. DITCH

+45 -Y3- 45' LT EXIST R/W

100' TAPER

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL SS

+40 -Y3- 45' LT

+50 -Y3- 40' LT EXIST R/W

+68 -Y3- 98' LT

+00 -Y3- 50' LT

+82 -Y3- 103' LT

+93.00 -Y3- 51.00' LT EXIST R/W

BEGIN WW FENCE

LATERAL 2' BASE DITCH SEE DETAIL T

+40 -Y3- 75' LT

-Y3DET-

PROP O/H POW LINES

PROP O/H POW & COMMUN LINES

REM

LAKE ROAD SR 1736 (PAVED)

-Y3-

-BY3-303

N 62°55'11.0" E

10'R

24'

TC

GREU (TL-3)

TB 2GI

15" CAAP W/ELBOW

CL B RIP RAP EST. 2 TON EST. 7 SY GEO

+00.98

MATCH LINE -Y3- STA. 45+00

SPECIAL LATERAL 3' BASE DITCH SEE DETAIL TT

+45 -Y3- EXIST R/W 45' RT

+50 -Y3- EXIST R/W 45.00' RT

+50 -Y3- 55' RT

+90.00 -Y3- EXIST R/W 45.00' RT

+73.50 -Y3- 47.50' RT

+90 -Y3- 55' RT

PROP PUE 60' RT -Y3- +71.00 -Y3- 57.50' RT

+81.00 -Y3- 69.00' RT

PROP PUE 60' RT -Y3- +84.00 -Y3- 49.00' RT

+15 -Y3- 63' RT

+76.11 -Y3- EXIST R/W

+15.00 -Y3- PROP R/W 53.00' RT

END WW FENCE

LATERAL 3' BASE DITCH SEE DETAIL LLL

+88.00 -Y3- PROP R/W

200' RIGHT TURN TAPER

400' TAPER

+00 -Y3- 110' RT

OVERHEAD POWER AND COMMUNICATION LINES

OVERHEAD POWER AND COMMUNICATION LINES

WOODS

IRON GATE

SOIL DRIVE

SEE SHEET 78 FOR PROFILE -Y3-

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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RALEIGH, NORTH CAROLINA 27609
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NC License No. F-0105

REVISIONS

8/17/99 – PARCELS 4,48 – CHANGED PUE TO DUE AND REVISED AREA STATION -Y3- 62+32 TO 66+40 RT
7/13/2018 – PARCELS 48,47 – ADDED REMOVED TCE STATION -Y3- 65+91 TO 74+00 RT
PARCEL 4,47 – ADDED PUE STATION -Y3- 62+32 TO 66+40 RT
PARCEL 4 – ADDED PDE STATION -Y3- 61+00 TO 65+62 LT
PARCEL 47 – ADDED RW STATION -Y3- 64+00 TO 66+72 LT
PARCEL 57 – NEW PARCEL NUMBER ADDED RW AND TCE STATION -Y3- 66+72 TO 67+78 LT
PARCELS 58,59,60,61 – NEW PARCEL NUMBERS ADDED RW STATION -Y3- 68+39 TO 74+00 LT

8/14/2018 – PARCELS 4,48 – REVISED DUE STATION -Y3- 62+32 TO 66+40 RT

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NAD 83

WEYERHAEUSER COMPANY
DB 1048 - PG 1014
4

ROBERT SAMUEL CLARK, et ux
DB 654 - PG 223
DB 1011 - PG 798
59

MILTON RAY GRIFFIN
DB 1058 - PG 430
60

FOREST OAKS MEMORIAL GARDENS, INC.
DB 1055 - PG 812
DB 1039 - PG 450
61

ELLA FAY STEELE
DB 1144 - PG 919
58

LYNN WILSON, et ux
DB 615 - PG 73
57

JEAN E. SANBORN
DB 1086 - PG 698
47

ROBERT SAMUEL CLARK, et ux
DB 879 - PG 362
48

CARTERET-CRAVEN OVERHEAD POWER LINE

MATCH LINE -Y3- STA. 61+00 SEE SHEET 17

-Y3- PT Sta. 68+40.15

-Y3- PC Sta. 61+98.86

A=0.041AC
Sta.61+00 -Y3-
Sta.62+82 -Y3-

EWD CONSTRUCTION -Y3- STA.74+00.00

MINIMIZE IMPACTS TO ORCHARD

DENOTES HAND CLEARING

PERMANENT FILL
1 POWER POLES= .0001 AC

SITE 7

SEE SHEET 79 FOR PROFILE -Y3-

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NC License No. F-0105

REVISIONS

8/17/99 - PARCELS 2.49 - ADDED PDE STATION -Y4- 33+95 TO 40+80 RT
PARCELS 2.49 - REVISED TCE STATION -Y4- 36+20 TO 40+80 RT
PARCEL 2 - CHANGED TCE TO PUE STATION -Y4- 37+68 TO 40+80 RT
PARCELS 2.50,51 - REVISED PUE STATION -Y4- 33+50 TO 40+80 LT

7/13/2018 - PARCELS 2.50,51 - CHANGED PUE TO DUE STATION -Y4- 33+50 TO 40+80 LT

8/14/2018 - PARCEL 50Z - REVISED DUE
PARCEL 51 - REVISED DUE AND PUE
PARCEL 2 - REVISED DUE STATION -Y4- 35+33 TO 40+80 LT
PARCEL 2 - REVISED DUE STATION -Y4- 37+79 RT
PARCEL 2 - REVISED DUE,PUE,AND TCE STATION -Y4- 37+12 RT

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MICHAEL O. WOODRUFF, et ux
DB 1494 - PG 68

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

-Y4DR-
PI Sta 10+97.71
Δ = 80° 24' 31.6" (RT)
D = 95° 29' 34.7"
L = 84.20'
T = 50.71'
R = 60.00'
SE = NC

-Y4DR- PT Sta. 11+31.20

-Y4DR- PC Sta. 10+47.00

POWERLINE EASEMENT

EDWARD J. DESTEFANO, et ux
DB 772 - PG 760

LESLIE GRIFFIN
DB 1243 - PG 364

WILLIAM D. WANICK, et ux
DB 1596 - PG 613

MALCOLM D. CIESZKO
DB 1092 - PG 361
49

UNITED STATES AGRICULTURE
CROATAN NATIONAL FOREST
2

CARTERET-CRAVEN OVERHEAD POWER LINE

OVERHEAD POWER LINE AND COMMUNICATION LINES

Sta.33+60 -Y4-
Sta.33+79 -Y4-
Sta.34+06 -Y4-
Sta.34+45 -Y4-
Sta.34+87 -Y4-
Sta.35+14 -Y4-
Sta.38+00 -Y4-
A=0.116

S20b

S20a

REPLACE EXISTING POLE

A(Z1)=853 SQ FT
A(Z2)=672 SQ FT
A(Z1)=330 SQ FT
A(Z2)=270 SQ FT

BEGIN CONSTRUCTION -Y4- STA.34+40.00

COMMUNICATION UNDERGROUND FIBER OPTIC CABLE

CARTERET-CRAVEN OVERHEAD POWER LINE

CARTERET-CRAVEN OVERHEAD POWER LINE

CARTERET-CRAVEN OVERHEAD POWER LINE

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL WW
DDE = 869 CY

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 105 CY

LATERAL 2' BASE DITCH
SEE DETAIL T
DDE = 869 CY

G1 RESTRICTED DRIVE
12' PAVED W/ 2' SHLD

SUNSET ROAD
SR 1741 (SR 1915 BST)

SR 1741 (SR 1915 BST)

SR 1741 (SR 1915 BST)

72" RCP-IV BURIED 10'

REMOVE EXIST. 42" CMP

RETAIN EXIST. 12" RCP

EXIST. 12" RCP 12° CONC

6' BOARD FENCE

TIE TO EXISTING DITCH

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

15" CMP WELDWIRE

TB 2GI

GREU (TL-3)

GPS R10I5-II

REM

N 24° 00' 27.8" W (450)

MATCH LINE -Y4- STA. 40+80 SEE SHEET 21

SITE 8

PERMANENT FILL 1
POWER POLES= .0001 AC

HC HC DENOTES HAND CLEARING

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

SEE SHEET 83 FOR PROFILE -Y4-
SEE SHEET 90 FOR PROFILE -Y4DR-

PROJECT REFERENCE NO.	SHEET NO.
R-1015	NE-25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.: F-0105

REVISIONS

7/13/2018 - PARCEL 2 - REVISED TCE STATION -Y4- 49+51 TO 56+57 RT
PARCEL 2 - REMOVED TCE STATION -Y4- 52+50 TO 53+00 RT
PARCEL 2 - CHANGED PUE TO DUE STATION -Y4- 56+57 TO 58+87 RT
PARCEL 2 - REVISED PUE AND TCE STATION -Y4- 58+87 TO 59+57 RT
PARCEL 2 - ADDED TCE STATION -Y4- 52+50 TO 53+05 LT
PARCEL 2 - ADDED DUE STATION -Y4- 52+60 TO 53+05 LT

8/17/99 - PARCEL 52 - ADDED TCE STATION -Y4- 55+51 TO 57+16 LT
PARCEL 52 - ADDED DUE STATION -Y4- 58+45 TO 58+96 LT
REVISED PUE AND TCE STATION -Y4- 58+75 LT
PARCEL 52 - REVISED DUE, PDE AND TCE STATION -Y4- 58+86 RT
PARCEL 2 - REVISED DUE, PDE AND TCE -Y4- STATION 55+70 TO 58+86 RT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

DENNIS R. LAUGHLIN
DB 1629 - PG 981
DB 1629 - PG 977
52

NAD 83

OVERHEAD POWER LINE AND COMMUNICATION LINE

CARTERET-CRAVEN OVERHEAD POWER LINE

OVERHEAD POWER LINE AND COMMUNICATION LINES

REPLACE EXISTING POLE

UNDERGROUND COMMUNICATION FIBER OPTIC CABLE

MATCH LINE -Y4- STA. 48+30

-Y4- PC Sta. 49+51.58
SA.51+05 -Y4-(Z2)
-Y4- PT Sta. 50+76.36
51+44-Y4-(Z1)
-Y4- PC Sta. 53+38.07
53+74.82 -Y4-
52+00-Y4-(Z1)
-Y4- PT Sta. 56+35.42
-Y4- PT Sta. 60+65.28

A1=.006AC
50+78 -Y4-
REM 2=543 SQ FT
51+27-Y4-(Z2)
A3=486 SQ FT Z1
51+84-Y4-(Z1)
52+17-Y4-(Z2)
S196
S19a
A6=0.071 AC
A5=528 SQ FT Z2
A4=270 SQ FT Z1

-Y4-
PI Sta 50+13.97
Δ = 0° 32' 41.2" (RT)
D = 0° 26' 11.8"
L = 124.78'
T = 62.39'
R = 13,123.00'
SE = NC

PI Sta 54+88.39
Δ = 20° 46' 34.8" (LT)
D = 6° 59' 14.2"
L = 297.34'
T = 150.32'
R = 820.00'
SE = 0.070
RQ = 147.00'
DS = 40 mph

SITE 9

PERMANENT FILL 2
POWER POLES= .0002 AC

HC HC DENOTES HAND CLEARING

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

SEE SHEET 83 FOR PROFILE -Y4-

19-NOV-2018 13:02
R:\Utilities\Engineering\NEU\r-1015_rdy46_NE25_psh.dgn
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WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	44+00 TO 53+78 -L-	POWER LINE&POWER POLE	< 0.01				0.66					
	57+77 TO 58+00 -L-	POWER LINE					< 0.01					
2	58+00 TO 72+00 -L-	POWER LINE & POWER POL	< 0.01				0.56					
3	72+00 TO 89+04 -L-	POWER LINE & POWER POL	< 0.01				0.95					
	89+24 TO 92+37 -L-	POWER LINE					0.05					
	92+96 TO 96+80 -L-	POWER LINE					0.06					
4	116+63 TO 120+51 -L-	POWER LINE					0.73					
	119+66 TO 121+28 -L-	POWER LINE					0.58					
5	128+97 TO 136+09 -L-	POWER LINE					1.83					
6	53+97 TO 55+60 -Y3-	POWER LINE&POWER POLE	< 0.01				0.09					
	59+17 TO 61+00 -Y3-	POWER LINE&POWER POLE	< 0.01				0.09					
7	61+00 TO 62+82 -Y3-	POWER LINE&POWER POLE	< 0.01				0.04					
8	35+14 TO 38+00 -Y4-	POWER LINE&POWER POLE	< 0.01				0.12					
9	50+78 TO 51+05 -Y4-	POWER LINE&POWER POLE	< 0.01				< 0.01					
	52+17 TO 53+78.82 -Y4-	POWER LINE&POWER POLE	< 0.01				0.07					
TOTALS*:			< 0.01				5.84			0	0	0

*Rounded totals are sum of actual impacts

NOTES:

#REF!

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
11/19/2018
CRAVEN COUNTY
R-1015
34360.1.2
SHEET 0 OF 0

Revised 2016 09 09

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	TEMP ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
6	POWER LINE	-L- 243+32 to				63		63					
		-L- 243+41											
6	POWER LINE	-L- 243+42 to					559	559					
		-L- 243+63											
8	POWER LINE	-Y4- 33+60 to					672.0	672.0					
		-Y4-33+79											
		-Y4- 33+79 to				853.0		853.0					
		-Y4- 34+06											
		-Y4- 34+45 to				330.0		330.0					
		-Y4- 34+87											
		-Y4- 34+87 to					270.0	270.0					
		-Y4- 35+14											
9		-Y4- 51+05 TO 51+27					543.0	543.0					
		-Y4-51+27 TO 51+44				486.0		486.0					
		-Y4-51+84 TO 52+00				270.0		270.0					
		-Y4-52+00 TO 52+17					528.0	528.0					
SUB TOTAL :						2002	2572.0	4574					
TOTAL:						2002	2572	4574	0	0	0		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)

11/19/2018

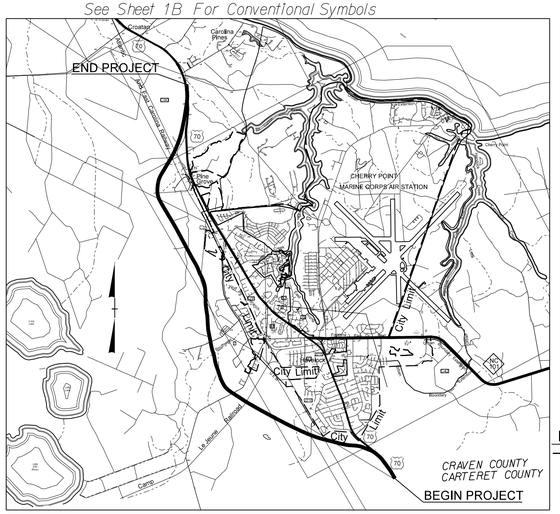
Rev. May 2006

09/08/99

TIP PROJECT: R-1015

CONTRACT: C204177

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CRAVEN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-1015	1	

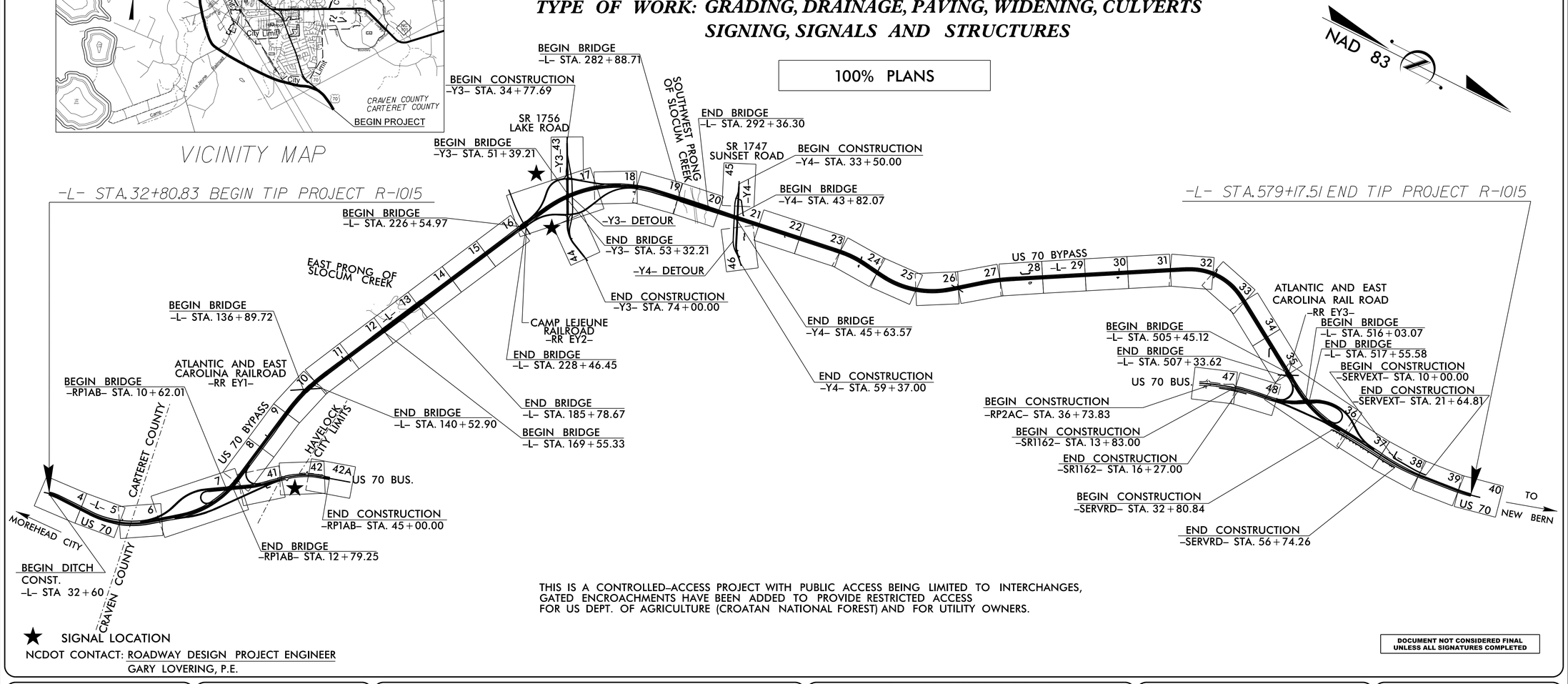
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34360.1.2	NHF-70(49)	PE
34360.2.4	NHF-70(49)	RW
34360.2.5	NHF-70(49)	UTIL
34360.3.4	NHF-70(49)	CONST

LOCATION: US 70 (HAVELOCK BYPASS) FROM SOUTH OF CARTERET /CRAVEN COUNTY LINE TO SOUTH OF SR 1176, (CAROLINA PINES BLVD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, WIDENING, CULVERTS SIGNING, SIGNALS AND STRUCTURES

100% PLANS

NAD 83



★ SIGNAL LOCATION

NCDOT CONTACT: ROADWAY DESIGN PROJECT ENGINEER
GARY LOVERING, P.E.

THIS IS A CONTROLLED-ACCESS PROJECT WITH PUBLIC ACCESS BEING LIMITED TO INTERCHANGES, GATED ENCROACHMENTS HAVE BEEN ADDED TO PROVIDE RESTRICTED ACCESS FOR US DEPT. OF AGRICULTURE (CROATAN NATIONAL FOREST) AND FOR UTILITY OWNERS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2015 = N/A
ADT 2035 = 22,900
K = 9 %
D = 60 %
T = 6 % *
V = 70 MPH
* TTST 3% DUAL 3%
FUNC. CLASS = FREEWAY (FUTURE INTERSTATE)

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R-1015 = 9.691 MILES
LENGTH OF STRUCTURE TIP PROJECT R-1015 = 0.657 MILES
TOTAL LENGTH OF TIP PROJECT R-1015 = 10.348 MILES

Prepared for NCDOT In the Office of:
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX (F-0105)

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 16, 2016

LETTING DATE: FEBRUARY 19, 2019

TIM REID, PE
PROJECT ENGINEER

TRENT HUFFMAN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brooke E. Anderson P.E.

SIGNATURE:

ROADWAY DESIGN ENGINEER

moffatt & nichol

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID P.E.

SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

11/2/2018
G:\RAY\9729-02\CADD\R1015\Roadway\Proj\r-1015_rdy_tsh.dgn
gmodlin

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
R-1015	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2A-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

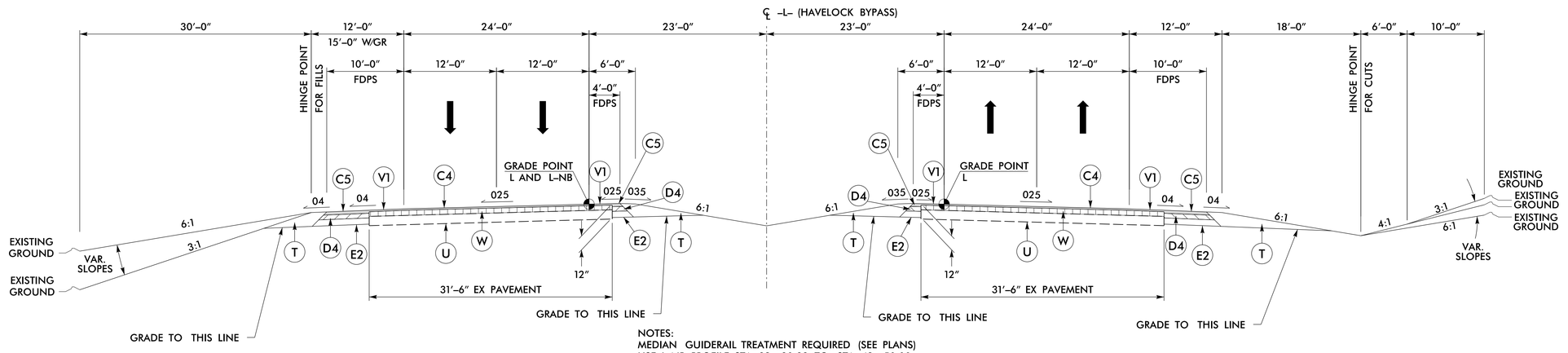
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No. F-0105

PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN - LETTER DATED 10/31/2018)

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	D3	PROP. APPROX. 3½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	D4	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R1	2'-6" CONCRETE CURB AND GUTTER.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	D5	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R2	SHOULDER BERM GUTTER.
C4	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	EXPRESSWAY GUTTER.
C5	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E2	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	R4	1'-6" CONCRETE CURB AND GUTTER.
C6	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	T	EARTH MATERIAL.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	J1	PROP. 8" AGGREGATE BASE COURSE.	U	EXISTING PAVEMENT.
D2	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	J2	PROP. 10" AGGREGATE BASE COURSE.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD DETAILS).
		J3	PROP. VARIABLE DEPTH AGGREGATE BSAE COURSE.	V1	MILLED RUMBLE STRIP (STD.665.01)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



NOTES:
MEDIAN GUIDERAIL TREATMENT REQUIRED (SEE PLANS)
USE L-NB PROFILE STA 32+80.83 TO STA 42+50.00
USE L-NB PROFILE STA 561+00.00 TO 579+17.51

TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1:

-L- STA 32+80.83 TO STA 42+50.00
-L- STA 547+00.00 TO STA 579+17.51

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11/2/2018
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rmadlin

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2A-2

ROADWAY DESIGN ENGINEER

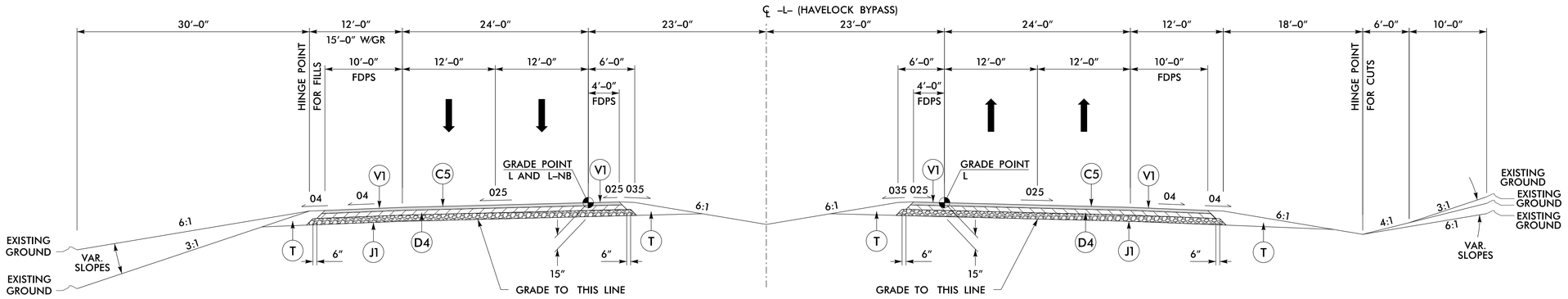
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

C5	3" S9.5C
D4	4" I19.0C
E2	5" B25.0C
E3	VAR B25.0C
J1	8" ABC
J3	VAR ABC
R2	SBG
R3	EXPWY GUTTER
T	EARTH MATERIAL
V1	MILLED RUMBLE STRIPS



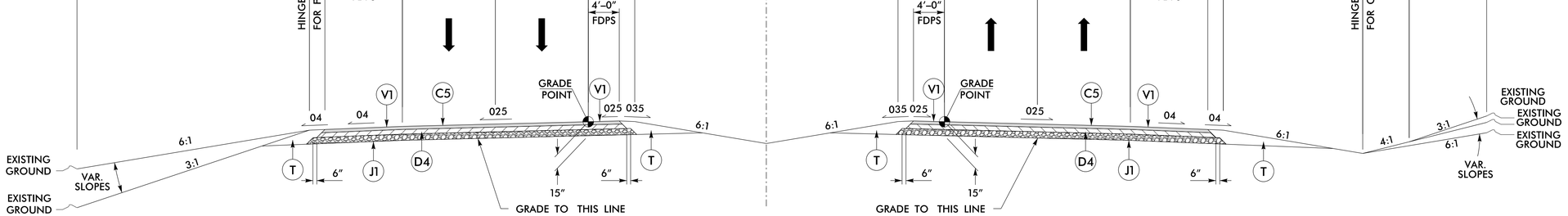
NOTE:
USE 2:1 FILL SLOPES WITH TYPICAL SECTION 2 AT THE FOLLOWING LOCATIONS:
–L– STA 341+00 TO STA 349+50 LT
–L– STA 390+00 TO STA 398+00 LT
–L– STA 352+00 TO STA 379+50 RT

NOTE:
MEDIAN GUIDERAIL TREATMENT REQUIRED (SEE PLANS)
USE L–NB PROFILE STA 42+50.00 TO STA 58+00.00

TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2:

–L– STA 42+50.00 TO STA 137+15.83 (BEGIN BRIDGE NBL)
–L– STA 140+82.61 (END BRIDGE NBL) TO STA 162+00.00
–L– STA 193+00.00 TO STA 226+52.04 (BEGIN BRIDGE NBL)
–L– STA 228+43.15 (END BRIDGE NBL) TO STA 275+00.00
–L– STA 300+00.00 TO STA 505+30.26 (BEGIN BRIDGE NBL)
–L– STA 507+18.76 (END BRIDGE NBL) TO STA 547+00.00



NOTE:
MEDIAN GUIDERAIL TREATMENT REQUIRED (SEE PLANS)

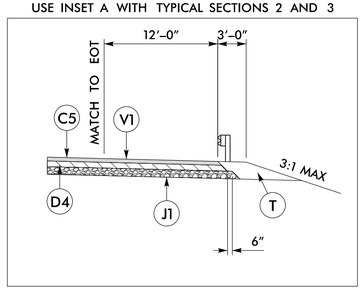
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3:

–L– STA 162+00.00 TO STA 169+55.33 (BEGIN BRIDGE NBL)
–L– STA 185+78.67 (END BRIDGE NBL) TO STA 193+00.00
–L– STA 275+00.00 TO STA 282+88.71 (END BRIDGE NBL)
–L– STA 292+36.30 (END BRIDGE NBL) TO STA 300+00.00

INSET A

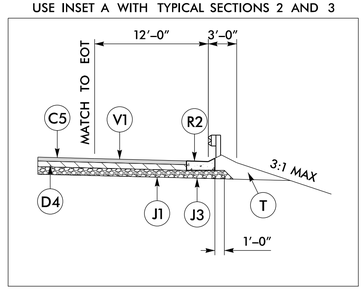
USE INSET A WITH TYPICAL SECTIONS 2 AND 3



–L– PAVE TO FACE OF GUARDRAIL DETAIL
USE AT LOCATIONS SHOWN ON PLANS

INSET B

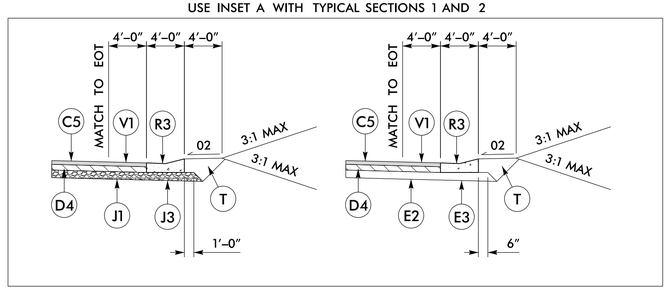
USE INSET A WITH TYPICAL SECTIONS 2 AND 3



–L– SHOULDER BERM GUTTER DETAIL
USE AT LOCATIONS SHOWN ON PLANS

INSET C

USE INSET A WITH TYPICAL SECTIONS 1 AND 2



–L– EXPRESSWAY GUTTER DETAIL
USE AT LOCATIONS SHOWN ON PLANS

6/2/99

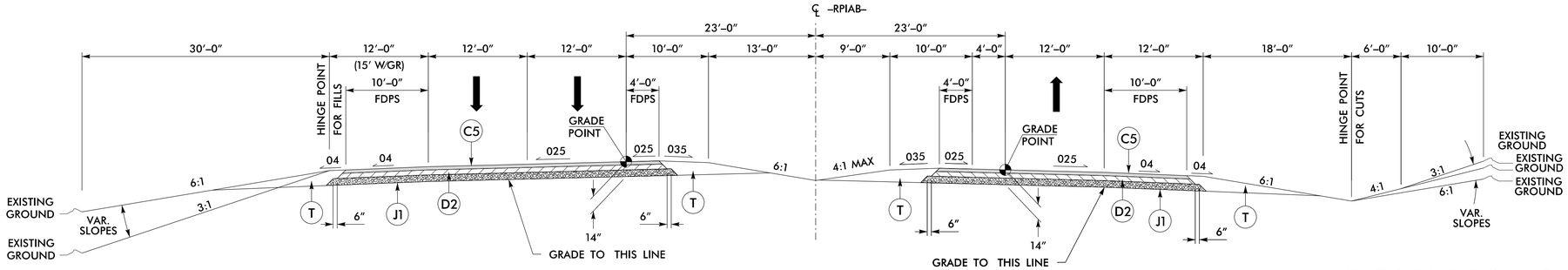
PROJECT REFERENCE NO.	SHEET NO.
R–1015	2A–3

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

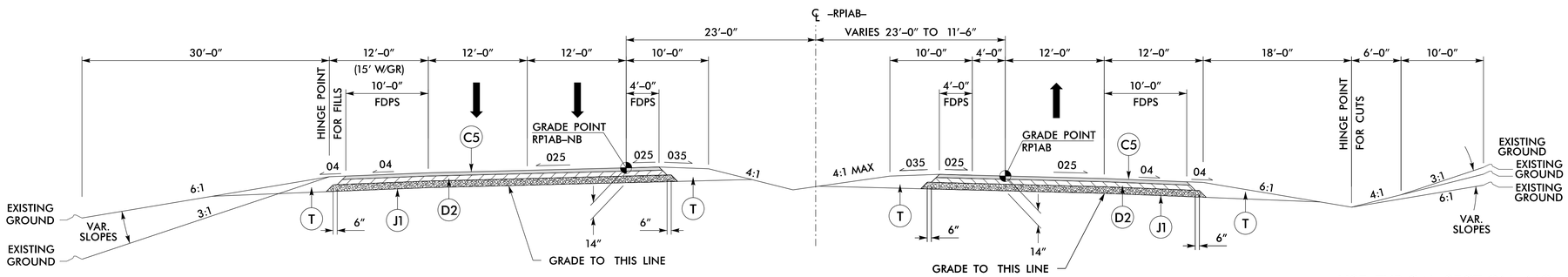
C4	1 1/2″ S9.5C
C5	3″ S9.5C
D2	3″ I19.0C
E1	4″ B25.0C
E3	VAR B25.0C
J1	8″ ABC
J3	VAR ABC
R2	SBG
R4	1′–6″ CURB AND GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

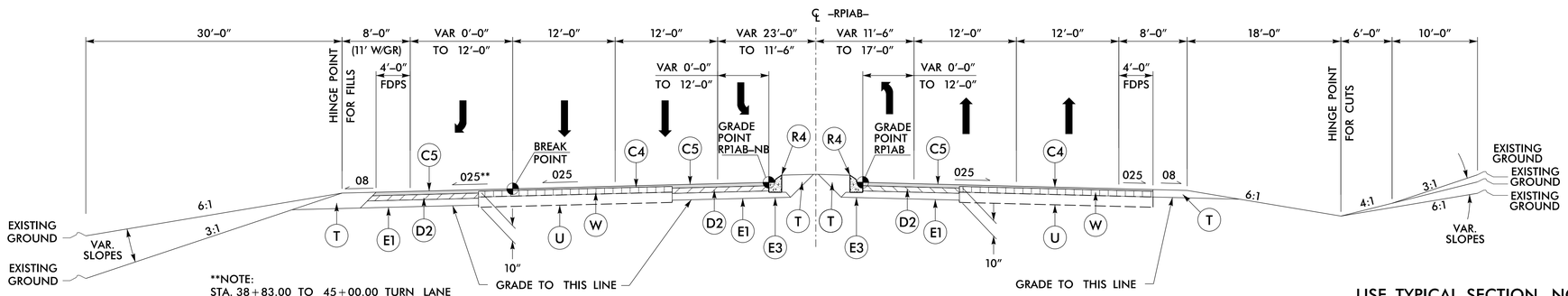
–RPIAB– STA 4+89.37 TO STA 10+30.95 (BEGIN BRIDGE EBL)
–RPIAB– STA 12+53.45 (END BRIDGE EBL) TO STA 19+34.69



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

–RPIAB– STA 19+34.69 TO STA 22+95.46

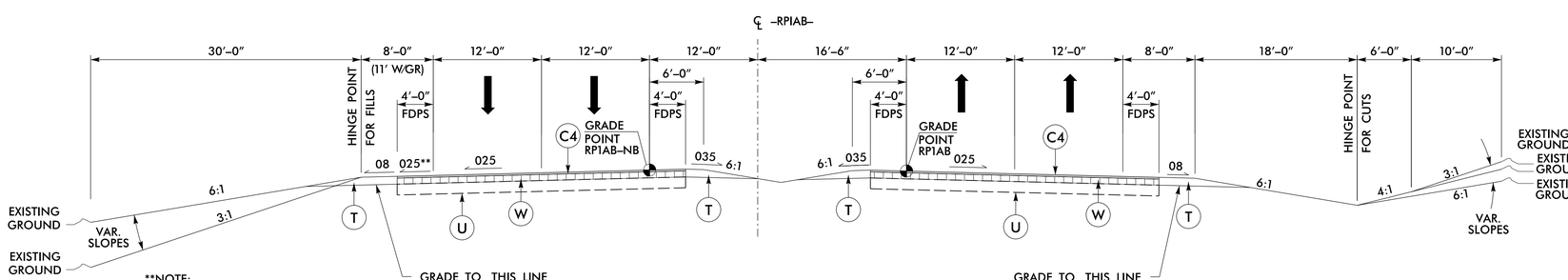


**NOTE:
STA. 38+83.00 TO 45+00.00 TURN LANE AND PAVED SHOULDER SLOPE =2%

TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

–RPIAB– STA 22+95.46 TO STA 42+85.75



**NOTE:
STA. 38+83.00 TO 45+00.00 TURN LANE AND PAVED SHOULDER SLOPE =2%

GRADE TO THIS LINE

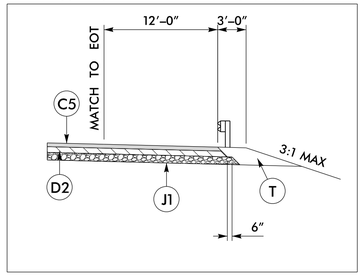
TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

–RPIAB– STA 42+85.75 TO STA 45+00.00

INSET D

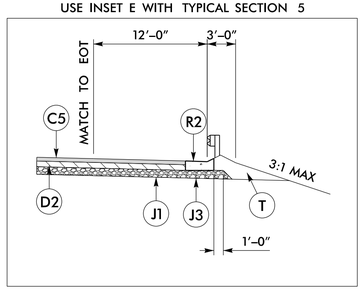
USE INSET D WITH TYPICAL SECTION 5



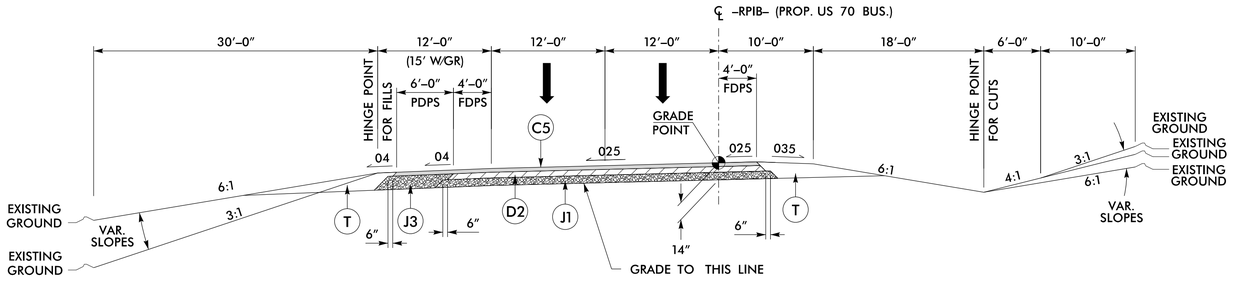
–RP1AB– PAVE TO FACE OF GUARDRAIL DETAIL
USE AT LOCATIONS SHOWN ON PLANS

INSET E

USE INSET E WITH TYPICAL SECTION 5



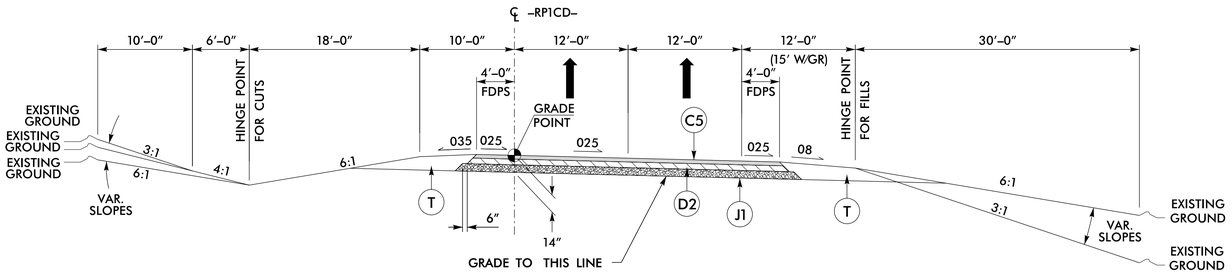
–RP1AB– SHOULDER BERM GUTTER DETAIL
USE AT LOCATIONS SHOWN ON PLANS



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

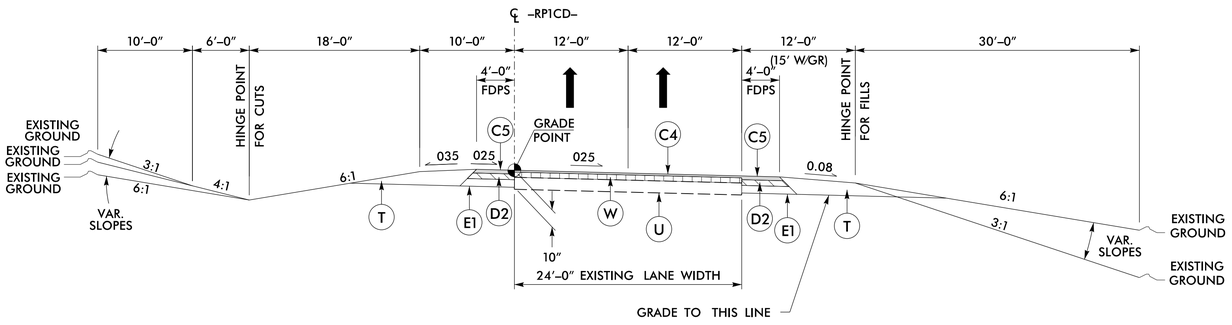
–RP1B– STA 0+00.00 TO STA 25+50.60



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9:

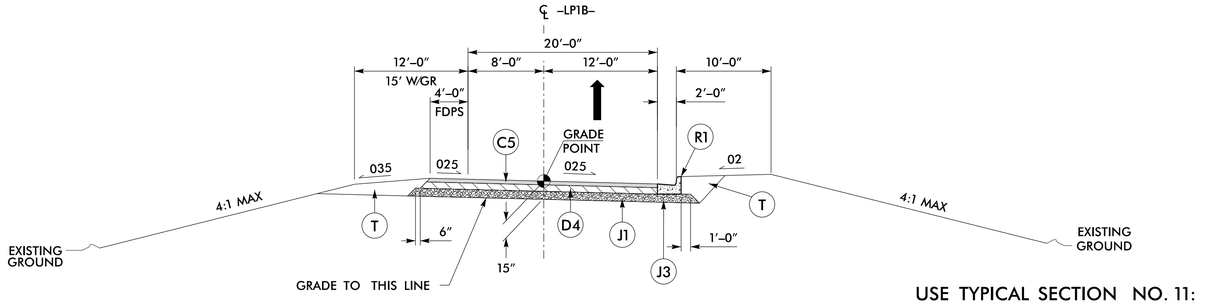
–RP1CD– STA. 0+00.00 TO STA. 15+50.00



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10:

–RP1CD– STA. 15+50.00 TO STA. 36+93.06



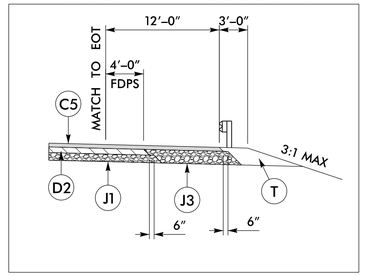
TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11:

–LP1B– STA. 0+00.00 TO STA. 9+04.19

INSET F

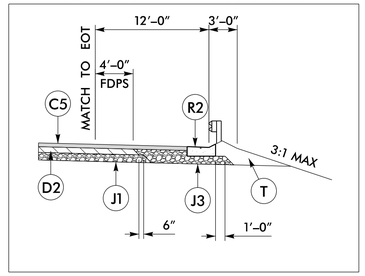
USE INSET D WITH TYPICAL SECTION 8



–RP1B– PAVE TO FACE OF GUARDRAIL DETAIL
USE AT LOCATIONS SHOWN ON PLANS

INSET G

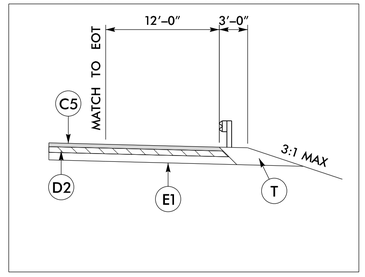
USE INSET E WITH TYPICAL SECTION 8



–RP1B– SHOULDER BERM GUTTER DETAIL
USE AT LOCATIONS SHOWN ON PLANS

INSET H

USE INSET H WITH TYPICAL SECTION 10



–RP1CD– PAVE TO FACE OF GUARDRAIL DETAIL
USE AT LOCATIONS SHOWN ON PLANS

PROJECT REFERENCE NO.	SHEET NO.
R–1015	2A–4

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

C4	1 1/2" S9.5C
C5	3" S9.5C
D2	3" I19.0C
D4	4" I19.0C
E1	4" B25.0C
J1	8" ABC
J3	VAR ABC
R1	2'–6" CURB AND GUTTER
R2	SBG
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
R–1015	2A–5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

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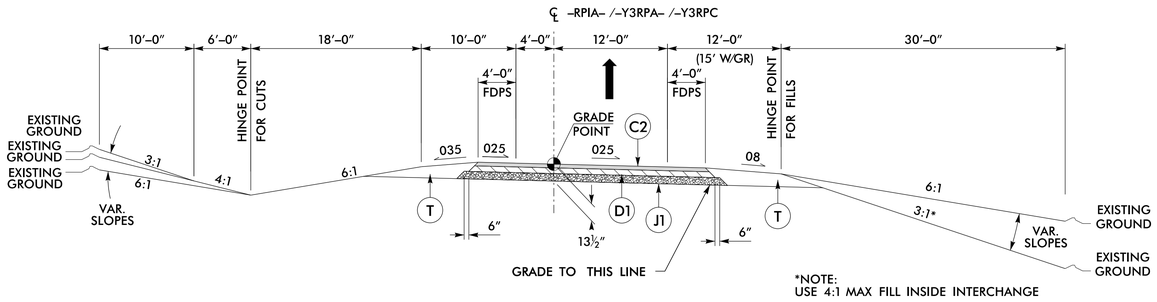
C1	1 1/2" S9.5B
C2	3" S9.5B
D1	2 1/2" I19.0C
E2	5" B25.0C
E3	VAR B25.0C
J1	8" ABC
J3	VAR ABC
R2	SBG
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

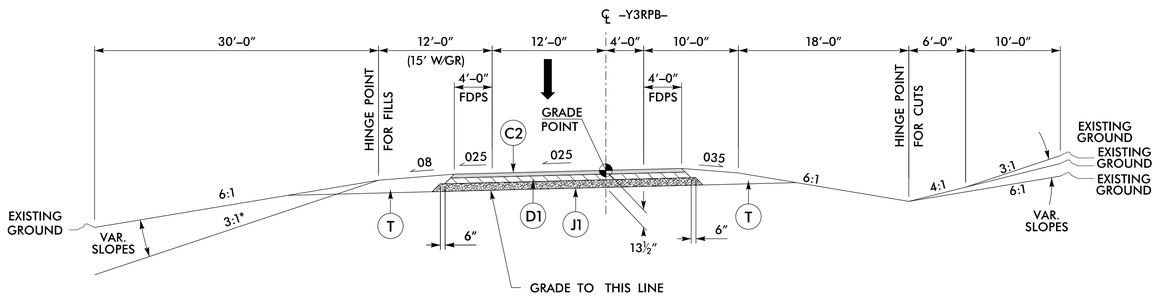


*NOTE:
USE 4:1 MAX FILL INSIDE INTERCHANGE

TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12:

–RPIA– STA. 0+00.00 TO STA. 9+86.56
–Y3RPA– STA. 0+00.00 TO STA. 17+44.28
–Y3RPC– STA. 0+00.00 TO STA. 17+13.94

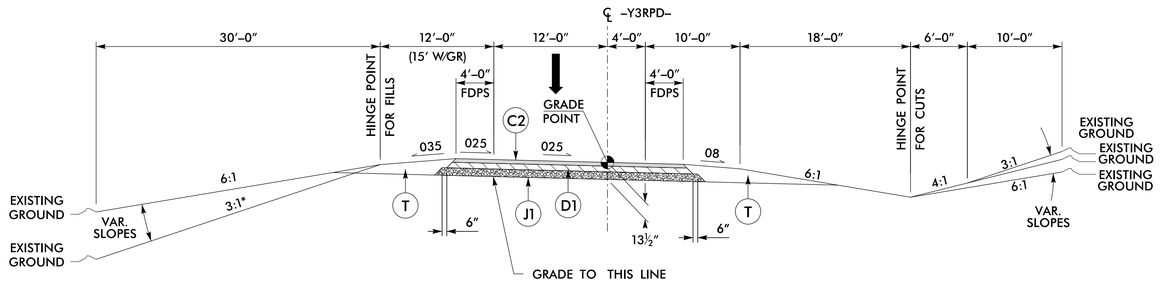


*NOTE:
USE 4:1 MAX FILL INSIDE INTERCHANGE

TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13:

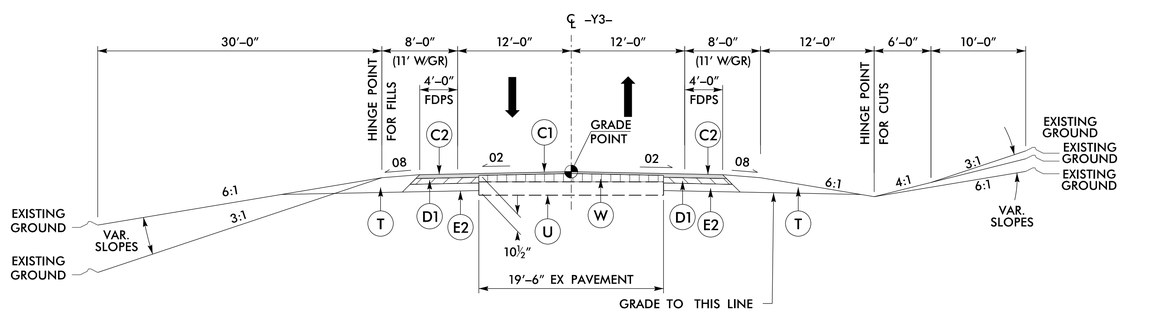
–Y3RPB– STA. 0+00.00 TO STA. 20+20.01



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14:

–Y3RPD– STA. 0+00.00 TO STA. 25+35.61



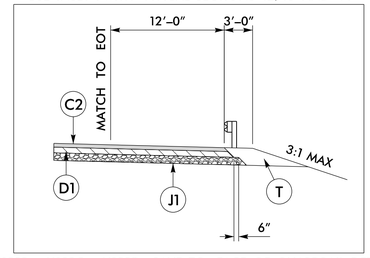
TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15:

–Y3– STA. 34+77.69 TO STA. 40+50.00
–Y3– STA. 65+00.00 TO STA. 73+81.89

INSET I

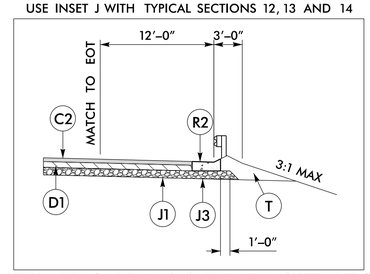
USE INSET I WITH TYPICAL SECTIONS 12, 13 AND 14



–Y3RPB– –Y3RPC– –Y3RPD– PAVE TO FACE OF GUARDRAIL DETAIL
USE AT LOCATIONS SHOWN ON PLANS

INSET J

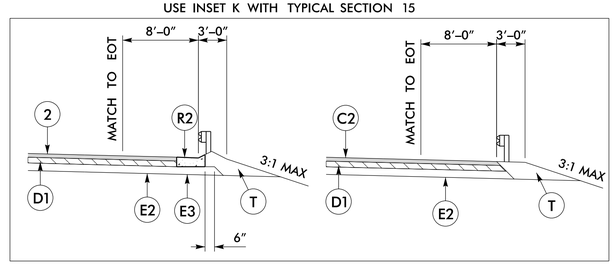
USE INSET J WITH TYPICAL SECTIONS 12, 13 AND 14



–Y3RPB– –Y3RPC– –Y3RPD– SHOULDER BERM GUTTER DETAIL
USE AT LOCATIONS SHOWN ON PLANS

INSET K

USE INSET K WITH TYPICAL SECTION 15



–Y3– PAVE TO FACE OF GUARDRAIL DETAIL
–Y3– SHOULDER BERM GUTTER DETAIL
USE AT LOCATIONS SHOWN ON PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2A-6

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

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C2	3" S9.5B
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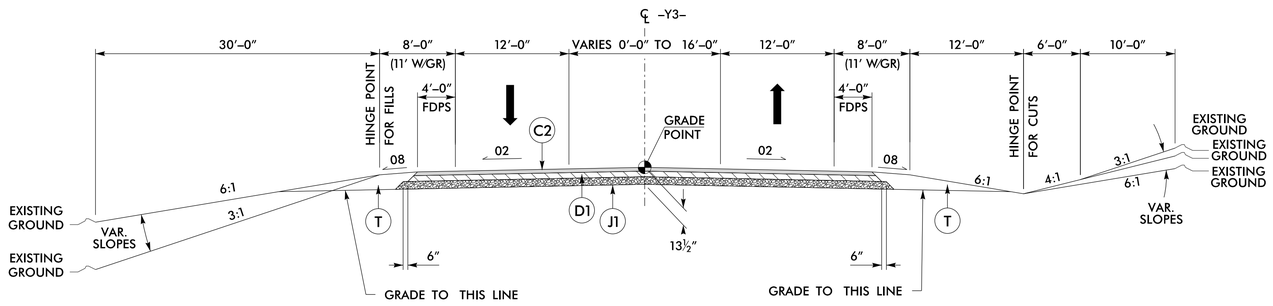
E2	5" B25.0C
E3	VAR B25.0C
J1	8" ABC
J3	VAR ABC
P	PRIME COAT
R2	SBG
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



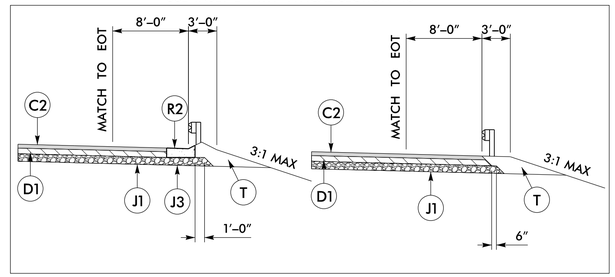
TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16:

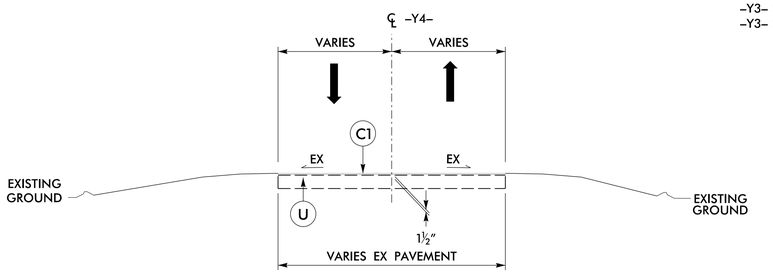
-Y3- STA 40+50.00 TO STA 51+39.21 (BEGIN BRIDGE)
-Y3- STA 53+32.21 (END BRIDGE) TO STA 65+00.00

INSET L

USE INSET L WITH TYPICAL SECTION 16



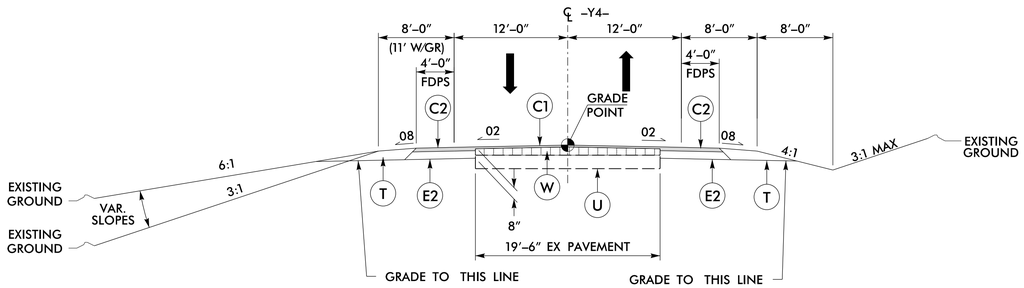
-Y3- SHOULDER BERM GUTTER DETAIL
-Y3- PAVE TO FACE OF GUARDRAIL DETAIL
USE AT LOCATIONS SHOWN ON PLANS



TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17:

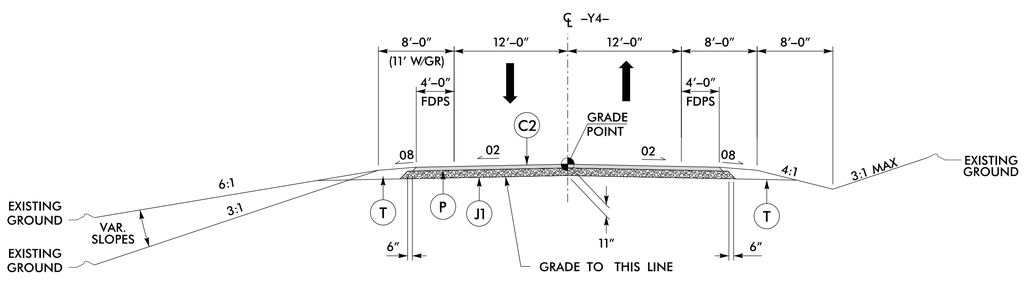
-Y4- STA. 33+50.00 TO STA. 34+40.00



TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18:

-Y4- STA. 34+40.00 TO STA. 36+50.00
-Y4- STA 56+00.00 TO STA 59+12.29



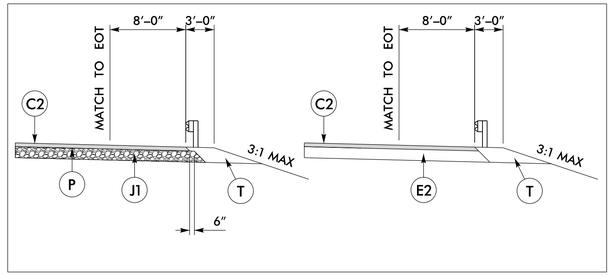
TYPICAL SECTION NO. 19

USE TYPICAL SECTION NO. 19:

-Y4- STA 36+50.00 TO STA 51+39.21 (BEGIN BRIDGE)
-Y4- STA 53+32.21 (END BRIDGE) TO STA 56+00.00

INSET M

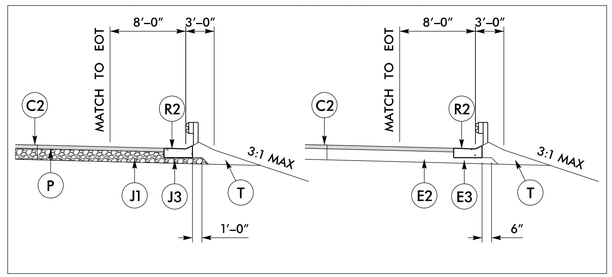
USE INSET M WITH TYPICAL SECTIONS 17 AND 18



-Y3- PAVE TO FACE OF GUARDRAIL DETAIL
USE AT LOCATIONS SHOWN ON PLANS

INSET N

USE INSET M WITH TYPICAL SECTIONS 17 AND 18



-Y3- SHOULDER BERM GUTTER DETAIL
USE AT LOCATIONS SHOWN ON PLANS

PROJECT REFERENCE NO.	SHEET NO.
R–1015	2A–7

ROADWAY DESIGN ENGINEER

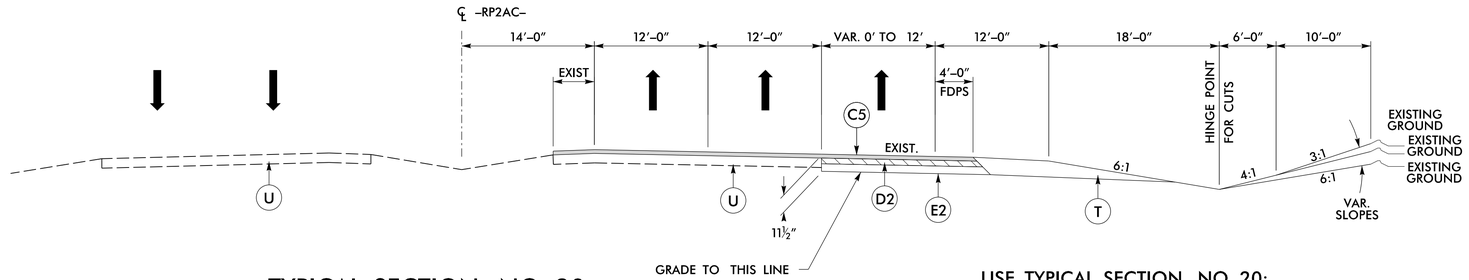
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

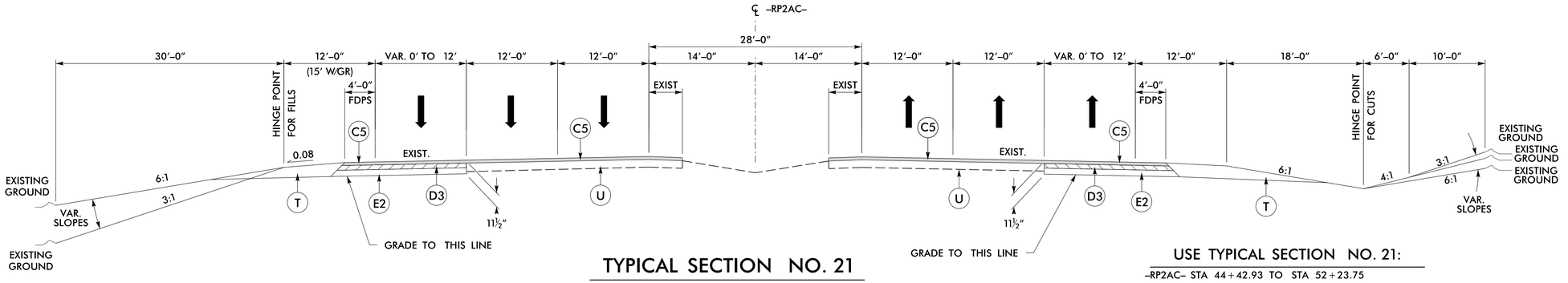
C4	1 1/2" S9.5C
C5	3" S9.5C
D3	3½" I19.0C
E2	5" B25.0C
J2	10" ABC
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 20

USE TYPICAL SECTION NO. 20:

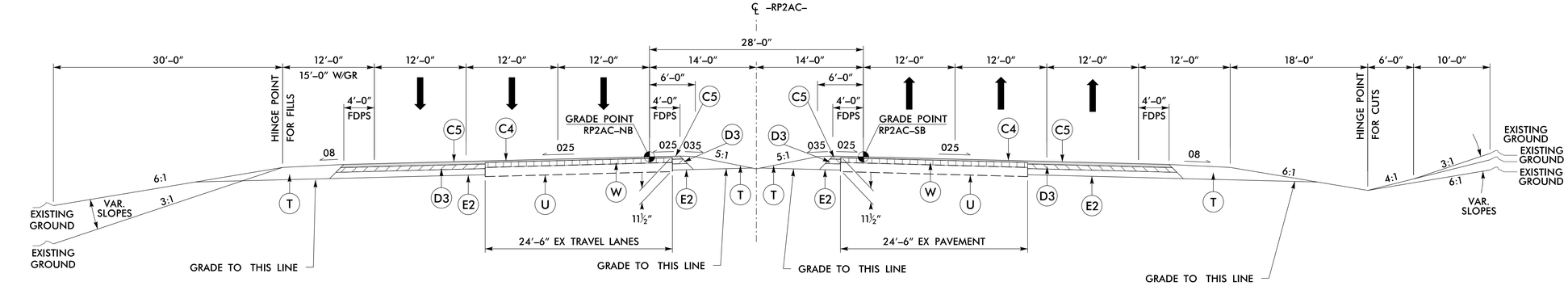
–RP2AC– STA. 38+30.60 TO STA. 44+42.93



TYPICAL SECTION NO. 21

USE TYPICAL SECTION NO. 21:

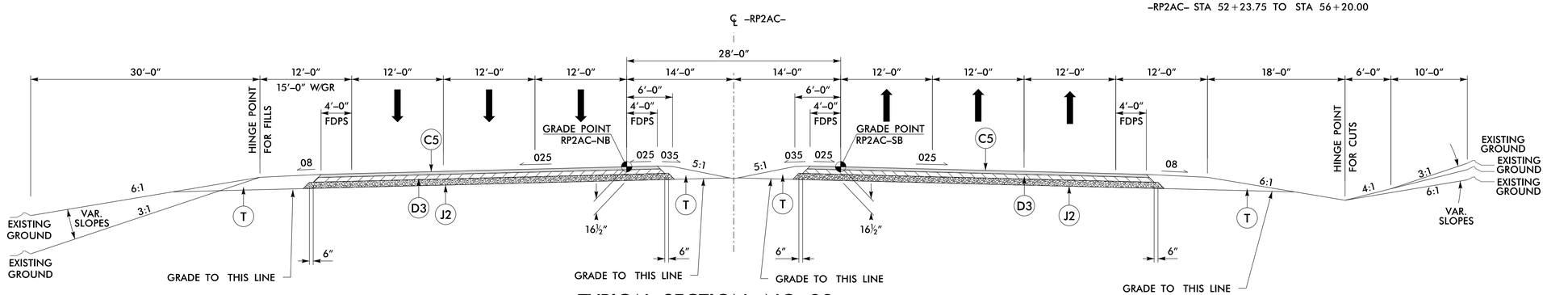
–RP2AC– STA 44+42.93 TO STA 52+23.75



TYPICAL SECTION NO. 22

USE TYPICAL SECTION NO. 22:

–RP2AC– STA 52+23.75 TO STA 56+20.00



TYPICAL SECTION NO. 23

USE TYPICAL SECTION NO. 23:

–RP2AC– STA 56+20.00 TO STA 57+16.75

PROJECT REFERENCE NO.	SHEET NO.
R–1015	2A–8

ROADWAY DESIGN ENGINEER

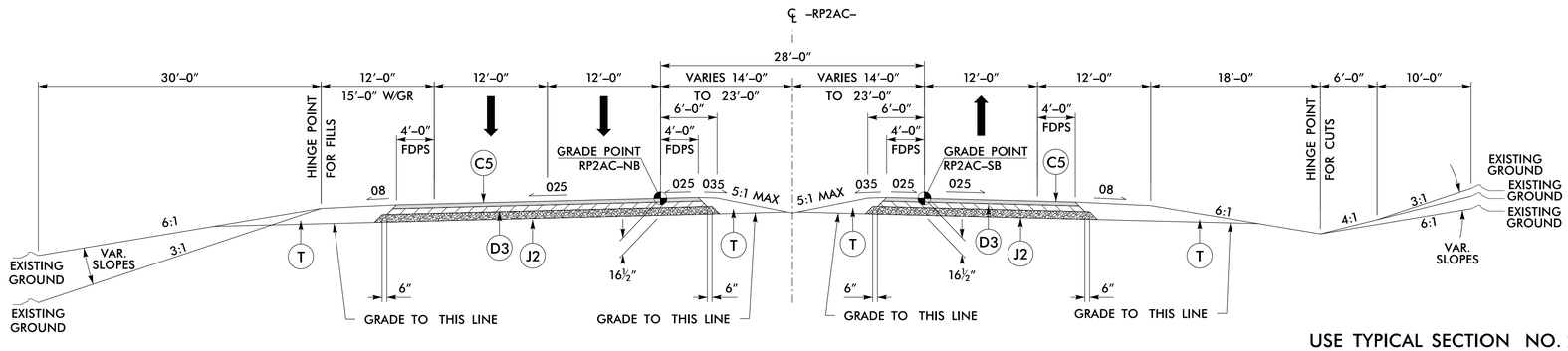
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

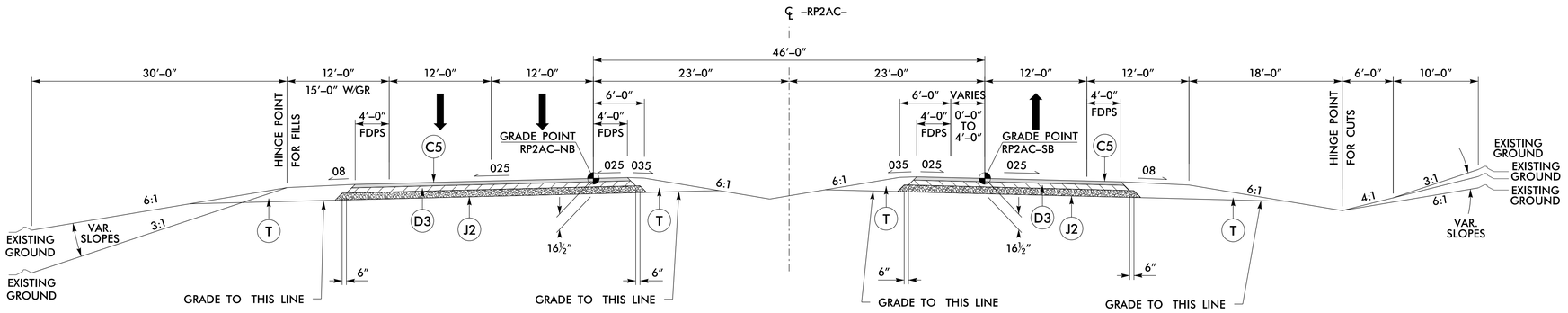
C5	3″ S9.5C
D1	2 1/2″ I19.0C
D2	3″ I19.0C
D3	3½″ I19.0C
J1	8″ ABC
J2	10″ ABC
J3	VAR ABC
R3	EXPWY GUTTER
T	EARTH MATERIAL



TYPICAL SECTION NO. 24

USE TYPICAL SECTION NO. 24:

–RP2AC– STA 57+16.75 TO STA 72+44.93



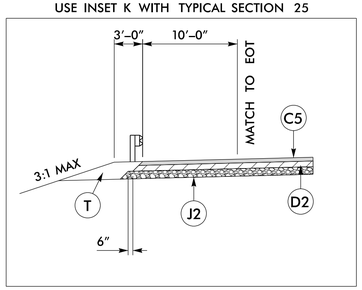
TYPICAL SECTION NO. 25

USE TYPICAL SECTION NO. 25:

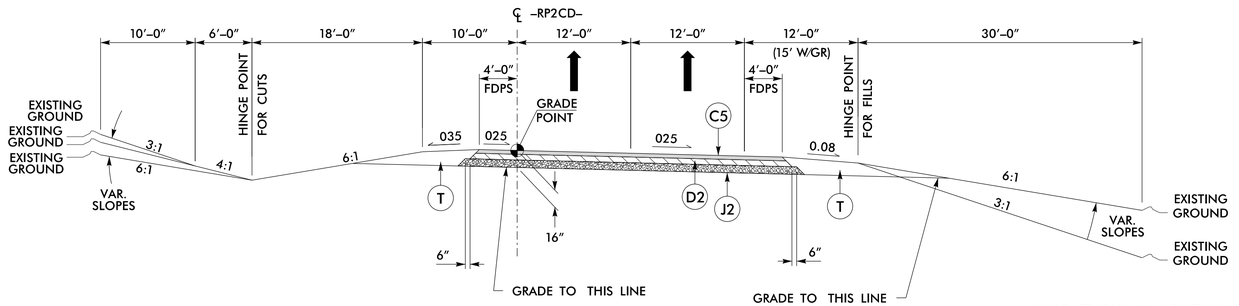
–RP2AC– STA 72+44.93 TO STA 79+22.74

INSET Q

USE INSET K WITH TYPICAL SECTION 25



–RP2CD– PAVE TO FACE OF GUARDRAIL DETAIL
USE AT LOCATIONS SHOWN ON PLANS



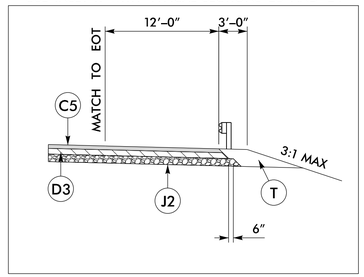
TYPICAL SECTION NO. 26

USE TYPICAL SECTION NO. 26:

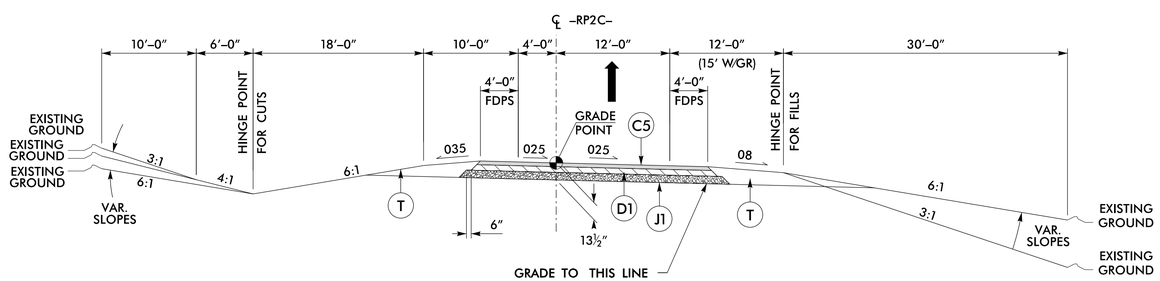
–RP2CD– STA 0+00.00 TO STA 24+82.06

INSET O

USE INSET K WITH TYPICAL SECTIONS 23 AND 24



–RP2AC– PAVE TO FACE OF GUARDRAIL DETAIL
USE AT LOCATIONS SHOWN ON PLANS



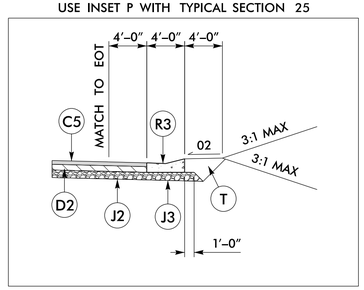
TYPICAL SECTION NO. 27

USE TYPICAL SECTION NO. 27:

–RP2C– STA. 0+00.00 TO STA. 13+82.23

INSET P

USE INSET P WITH TYPICAL SECTION 25



–RP2CD– EXPRESSWAY GUTTER DETAIL
USE AT LOCATIONS SHOWN ON PLANS

PROJECT REFERENCE NO.	SHEET NO.
R–1015	2A–9

ROADWAY DESIGN ENGINEER

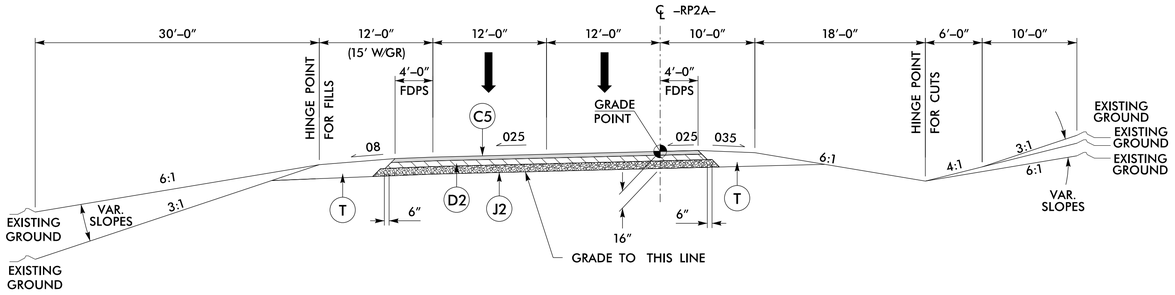
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

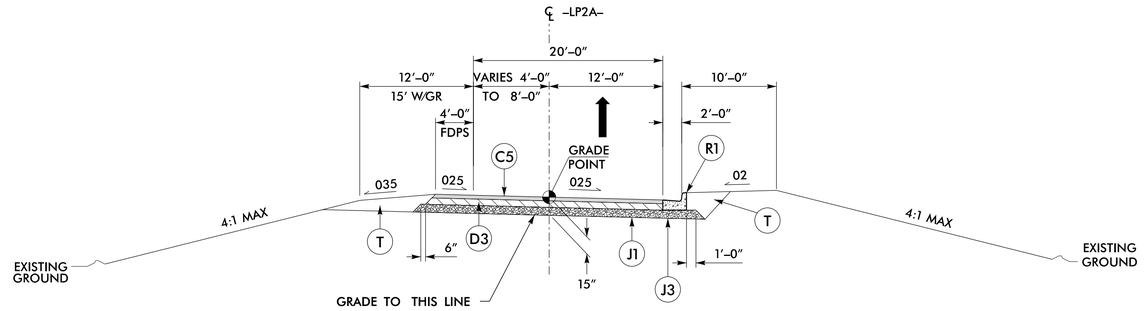
C1	1 1/2″ S9.5B
C2	3″ S9.5B
C5	3″ S9.5C
D2	3″ I19.0C
D3	4″ I19.0C
E1	4″ B25.0C
J1	8″ ABC
J2	10″ ABC
J3	VAR ABC
R1	2′–6″ CURB AND GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 28

USE TYPICAL SECTION NO. 28:

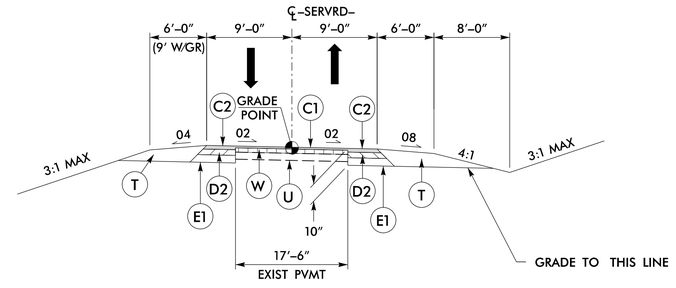
–RP2A– STA. 79+22.74 TO STA. 97+93.75



TYPICAL SECTION NO. 29

USE TYPICAL SECTION NO. 29:

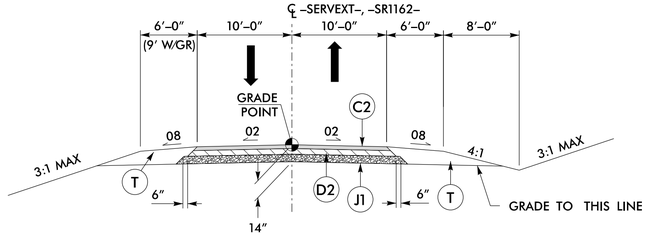
–LP2A– STA. 79+22.74 TO STA. 88+59.59



TYPICAL SECTION NO. 30

USE TYPICAL SECTION NO. 30:

–SERVRD– STA. 32+80.84 TO STA. 56+74.26



TYPICAL SECTION NO. 31

USE TYPICAL SECTION NO. 31:

–SERVEXT– STA. 10+00.00 TO STA. 21+64.81
–SR1162– 13+83.00 TO STA 16+27.00

PROJECT REFERENCE NO.	SHEET NO.
R–1015	2A–10

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

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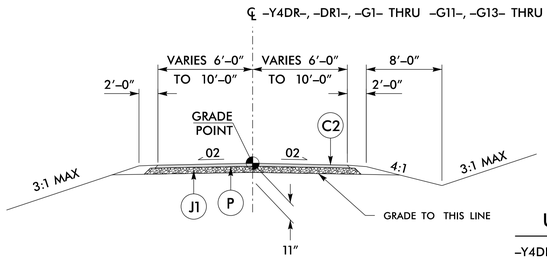
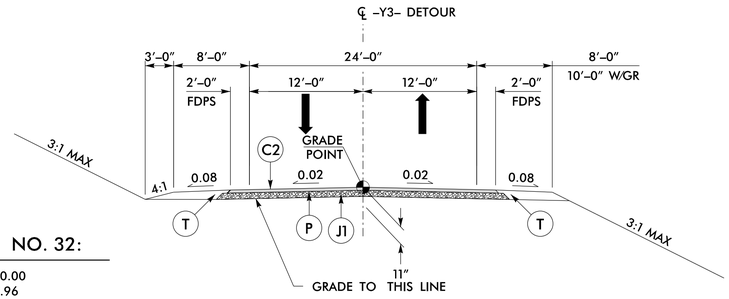
C1	1 1/2" S9.5B
C2	3" S9.5B
C3	VAR S9.5B
C4	1 1/2" S9.5C
C6	VAR S9.5C
D1	2 1/2" I19.0C
D2	3" I19.0C
D3	4" I19.0C
D4	VAR I19.0C
E3	VAR B25.0C
J1	8" ABC
P	PRIME COAT
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 32

USE TYPICAL SECTION NO. 32:

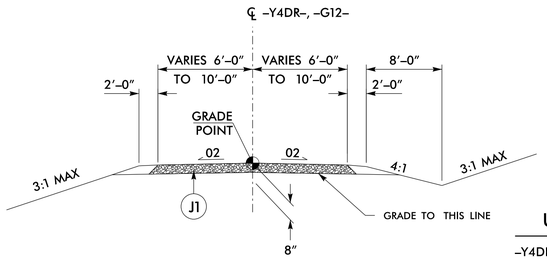
–Y4DR– STA 10+16.00 TO STA 14+20.00
–DR1– STA 10+00.00 TO STA 13+78.96
–G1– THRU –G11–
–G13– THRU –G15–



TYPICAL SECTION NO. 33

USE TYPICAL SECTION NO. 33:

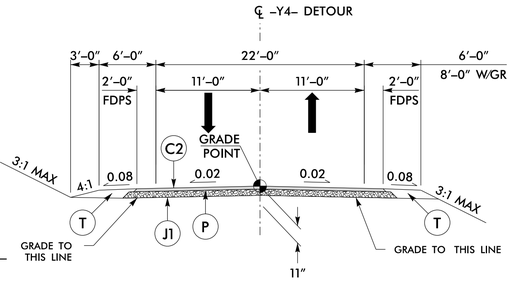
–Y3DET– STA. 36+50.00 TO STA. 69+00.00



TYPICAL SECTION NO. 34

USE TYPICAL SECTION NO. 34:

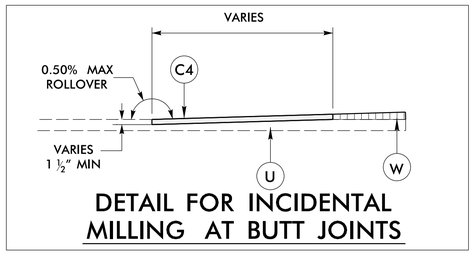
–Y4DR– STA 14+20.00 TO STA 16+03.02
–G12– STA 10+67.00 TO STA 13+47.00



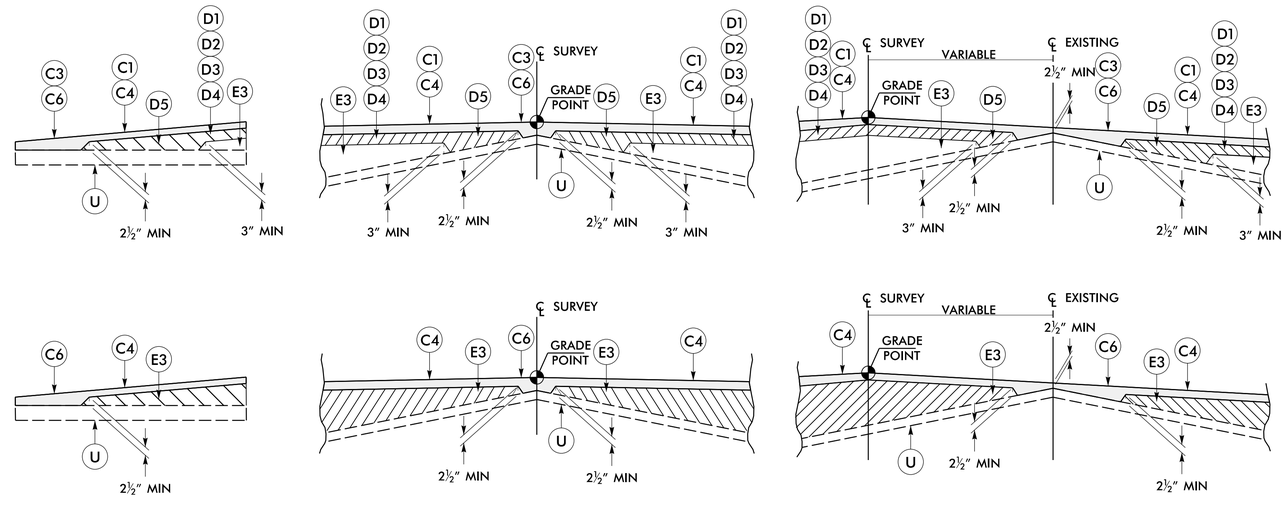
TYPICAL SECTION NO. 35

USE TYPICAL SECTION NO. 35:

–Y4DET– STA 34+60.97 TO STA 58+70.00



DETAIL FOR INCIDENTAL MILLING AT BUTT JOINTS



WEDGING DETAILS

5/28/99

DETAIL FOR –Y3– DETOUR

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-1

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Robert F. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No. F-0105

–Y3DET–
PI Sta 38+06.06
△ = 9° 39' 00.0" (LT)
D = 5° 49' 21.9"
L = 165.73'
T = 83.06'
R = 984.00'
SE = 0.040
RO = 80.00'
DS = 40 mph

–Y3DET– POT Sta. 34+00.00
–Y3DET– PC Sta. 37+23.00
–Y3DET– PT Sta. 38+88.73

WEYERHAEUSER COMPANY
DB 1048 – PG 1014
4

NAD 83

MAINTAIN DRAINAGE BETWEEN –Y3DET– AND THE CONSTRUCITON OF PROP. –Y3– FROM STA. 39+50 TO TEMP. LATERAL DITCH STARTING AT –Y3DET– STA. 42+50 (RT)

TIE PROP. TEMP. DITCH TO EXIST. DITCH

N 62° 55' 11.0" E

N 62° 16' 11.0" E

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T1

MAINTAIN DRAINAGE BETWEEN –Y3DET– AND THE CONSTRUCITON OF PROP. –Y3– FROM STA. 39+50 TO TEMP. LATERAL DITCH STARTING AT –Y3DET– STA. 42+50 (RT)

Fill in exist. ditch during construction of –Y3DET– and maintain drainage to Temp. Lateral Ditch starting at –Y3DET– Sta. 42+50 (RT)

BEGIN CONSTRUCTION
–Y3DET– Sta. 36+50.00

MATCHLINE SHEET 2B-2 –Y3DET– STA 45+00.00

SEE SHEETS 3D-1THRU 3D-2 FOR DRAINAGE DITCH DETAILS

-Y3- DET

DITCH LEGEND	
MEDIAN DITCH	– – – – – –
LEFT DITCH	–·–·–·–·–
RIGHT DITCH	----------

BEGIN GRADE
–Y3DET– STA 36+50.00
ELEV = 27.85'

PI = 38+00.00
EL = 28.30'
K = 150
VC = 100'

PI = 39+50.00
EL = 27.75'
K = 149
VC = 100'

(+)0.3000%
(–)0.3668%
(–)0.3668%
(+)0.3063%
(+)0.1259%
(–)0.1237%
(–)0.3000%
(–)0.8167%

BEGIN DITCH +29.00 LT 25.50'
END DITCH +50.00 LT 26.03'
BEGIN DITCH +50.00 RT 25.29'
+40.00 RT 25.02'
+60.00 RT 24.04'

TEMP. 18"
–Y3DET– STA. 44+73 ELEV. = 24.38'

PROPOSED UNDERCUT

70 60 50 40 30 20 10 0

34 35 36 37 38 39 40 41 42 43 44 45

11/2/2018
04:46:37
d:\temp\29-02\CADD\R1015\Roadway\Proj\R1015_rdy_psh_2B-1.dgn
smadiyo

5/28/99

DETAIL FOR –Y3– DETOUR

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brooke F. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.# F-0105

-Y3DET-
PI Sta 46+84.73
△ = 8° 31' 10.8" (RT)
D = 3° 29' 37.1"
L = 243.86'
T = 122.16'
R = 1,640.00'
SE = 0.030
RO = 60.00'
DS = 40 mph

-Y3DET- PC Sta. 45+62.58

-Y3DET- PT Sta. 48+06.44

-Y3DET-
PI Sta 58+22.21
△ = 14° 17' 09.0" (RT)
D = 3° 29' 37.1"
L = 408.91'
T = 205.52'
R = 1,640.00'
SE = 0.030
RO = 60.00'
DS = 40 mph

-Y3DET- PC Sta. 56+16.69

NAD 83

WEYERHAEUSER COMPANY
DB 1048 - PG 1014
4

MATCHLINE SHEET 2B-1 –Y3DET– STA 45+00.00

MATCHLINE SHEET 2B-3 –Y3DET– STA 59+00.00

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T2

REMOVE AFTER DETOUR

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T1

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T4

20.00' TYP

+22.38

+76.69

201 — 24" TEMP

202 — 60" TEMP

203 — 24" TEMP

N 60°47' 21.8" E

PDE

WOODS

EXIST R/W

LAKE ROAD
SR 1756 (19.5' BST)

TC

.0070'

BZ 1 BZ 2 JS

24" CONC
CMP
INV = 18.45'
INV = 18.55'

SEE SHEETS 3D-1THRU 3D-2 FOR DRAINAGE DITCH DETAILS

-Y3- DET

DITCH LEGEND

MEDIAN DITCH	– – – – – –
LEFT DITCH	·–·–·–·–·–·
RIGHT DITCH	----------

PI = 47+50.00
EL = 30.20'
K = 190
VC = 120'

(+)0.3063%
(–)0.3256%
(–) 0.1237%

TEMP. 24"
–Y3DET– STA. 50+50 ELEV. = 23.18'

+50.00 RT
23.31'

BEGIN DITCH
+50.00 LT
23.06'

END DITCH
+43.00 RT
24.17'

+50.00' LT
22.22'

(+)1.365%
(–) 0.8400%
(–) 1.5705%

END DITCH
+99.00 LT
19.88'

BEGIN DITCH
+99.00 LT
19.32'

TEMP. 60"
–Y3DET– STA. 53+08 ELEV. = 18.28'

(+) 0.3000%

+00.00 LT
19.83'

BEGIN DITCH
+60.00 RT
22.00'

(+) 0.1000%
(+) 0.1000%

TEMP. 24"
–Y3DET– STA. 55+00 ELEV. = 20.96'

70 60 50 40 30 20 10 0

45 46 47 48 49 50 51 52 53 54 55 56 57 58 59

11/2/2018
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smadlin

5/28/99

DETAIL FOR –Y3– DETOUR

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-3

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License NO.# F-0105

-Y3DET-
PI Sta 58+22.21
Δ = 14° 17' 09.0" (RT)
D = 3° 29' 37.1"
L = 408.91'
T = 205.52'
R = 1,640.00'
SE = 0.030
RO = 60.00'
DS = 40 mph

-Y3DET-
PI Sta 65+61.66
Δ = 51° 22' 42.8" (LT)
D = 8° 18' 56.8"
L = 617.84'
T = 331.43'
R = 689.00'
SE = 0.040
RO = 80.00'
DS = 40 mph

MATCHLINE SHEET 2B-2 –Y3DET– STA 59+00.00

-Y3DET- PT Sta. 60+25.60

-Y3DET- PC Sta. 62+30.22

-Y3DET- PT Sta. 68+48.07

END CONSTRUCTION
-Y3DET- Sta. 69+00.00

WEYERHAEUSER COMPANY
DB 1048 - PG 1014
4

ELLA FAY STEELE
DB 1144 - PG 919
58

ROBERT SAMUEL CLARK, et ux
DB 654 - PG 223
DB 1011 - PG 798
59

LYNN WILSON, et ux
DB 615 - PG 73
57

JEAN E. SANBORN
DB 1086 - PG 698
47

ROBERT SAMUEL CLARK, et ux
DB 879 - PG 362
48

TEMP 18"

REMOVE AFTER DETOUR

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T10

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T4

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T3

FILL IN POOL

SHIFT TO PROP. –Y3– DRIVE PIPE LOCATION AFTER DETOUR

TIE PROP. TEMP. DITCH TO EXIST. DITCH

TIE PROP. TEMP. DITCH TO EXIST. DITCH

GTD TO DRAIN PROP. –Y3– SAG TO TEMP. CHANNEL WHILE CONSTRUCTING THE PROP. OUTER LANE OF –Y3–

MAINTAIN DRAINGE BETWEEN –Y3DET– AND –Y3– EXIST. IN TEMP CHANNNEL DURING CONSTRUCTION OF PROP. –Y3– OUTER LANE

N 24° 41' 48.0" E

N 76° 04' 30.8" E

NAD 83

SEE SHEETS 3D-1THRU 3D-2 FOR DRAINAGE DITCH DETAILS

-Y3- DET

DITCH LEGEND	
MEDIAN DITCH	– – – – – –
LEFT DITCH	·–·–·–·–·–·
RIGHT DITCH	----------

END GRADE
-Y3DET- STA 69+00.00
ELEV = 26.70'

PI = 64+70.00
EL = 24.60'
K = 63
VC = 100'

PI = 67+30.00
EL = 27.90'
K = 96
VC = 190'

TEMP. 18"
–Y3DET– STA. 61+21 ELEV. = 20.61'

(+) 0.1000% (+) 0.1000% (+) 0.2235% (+) 0.3914% (+) 2.2333% (–) 0.3256% (+) 0.3914% (+) 1.2692% (+) 0.7133% (+) 1.2692% (–) 0.7059% (–) 0.1805% (–) 0.4595%

END DITCH +50.00 RT 22.45'
BEGIN DITCH 59+00 RT 20.70'
+50.00 LT 20.54'
+00.00 RT 21.10'
END DITCH +50.00 RT 24.45'
+00.00 LT 21.91'
BEGIN DITCH +50.00 RT 25.58'
END DITCH +93.00 LT 24.00'
BEGIN DITCH +42.00 LT 24.91'
END DITCH +16.00 RT 25.10'
END DITCH +16.00 LT 24.57'

PROPOSED UNDERCUT

59 60 61 62 63 64 65 66 67 68 69 70 71

0 10 20 30 40 50 60 70

11/2/2018
D:\R1015729-02\CADD\R1015\Roadway\Proj\R1015_rdy_psh_2B-3.dgn
smadiyo

5/28/99

DETAIL FOR –Y4– DETOUR

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-4

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brooke E. Anderson

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(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No. F-0105

–Y4DET–	
PI Sta 35+83.01	PI Sta 39+46.31
△ = 16° 55' 49.1" (RT)	△ = 16° 55' 49.2" (LT)
D = 6° 59' 14.2"	D = 6° 59' 14.2"
L = 242.30'	L = 242.30'
T = 122.04'	T = 122.04'
R = 820.00'	R = 820.00'
SE = NC	SE = NC
DS = 35 mph	DS = 35 mph

-Y4DET- POT Sta. 32+60.00

BEGIN CONSTRUCTION
-Y4DET- PC Sta. 34+60.97

-Y4DET- PT Sta. 37+03.27

-Y4DET- PC Sta. 38+24.27

EDWARD J. DESTEFANO, et ux
DB 772 - PG 760

WILLIAM LESLIE GRIFFIN
DB 1243 - PG 364

MARGARET ELLEN JONES
DB 1493 - PG 142

DANIEL F. WALSH, IV, et ux
DB 1153 - PG 605

UNITED STATES AGRICULTURE
CROATAN NATIONAL FOREST

WILLIAM D. WANICK, et ux
DB 1596 - PG 613

MALCOLM D. CIESZKO
DB 1092 - PG 361

SUNSET ROAD SR 1741 (19.5' BST)

PULLEY ROAD SR 1741 (19.5' BST)

REMOVE WHEN DETOUR REMOVED

TIE PROP. TEMP. DITCH TO EXIST. DITCH

TEMP. SPECIAL LATERAL 'V' DITCH SEE DETAIL T2

CL B RIP RAP EST. 3 TONS EST. 10 SY GF

Temp. pipe needed during construction of –Y4DET–. Once prog. –Y4– fill slope constructed pipe can be abandoned and removed with detour.

MATCHLINE SHEET 2B-5 –Y4DET– STA 40+00.00

SEE SHEETS 3D-1THRU 3D-2 FOR DRAINAGE DITCH DETAILS

-Y4- DET

DITCH LEGEND
- MEDIAN DITCH
- LEFT DITCH
- RIGHT DITCH

BEGIN GRADE
-Y4DET- STA 34+60.97
ELEV = 21.65'

PI = 35+65.00
EL = 22.00'
K = 67
VC = 80'

PI = 38+80.00
EL = 26.80'
K = 66
VC = 80'

TEMP. 18"
-Y4DET- STA. 37+64 ELEV. = 19.37'

TEMP. 18"
-Y4DET- STA. 38+78 ELEV. = 21.46'

(+)0.3364% (+)11.5238% (+) 0.0986% (+) 3.4490% (+)1.5913% (–) 0.2642% (+) 0.5238% (+)0.3182%

BEGIN DITCH +52.00 RT 15.75'
+50.00 RT 19.13'
+63.00 RT 19.34'
BEGIN DITCH +25.00 LT 21.84'
END DITCH +78.00 RT 21.17'
+78.00 LT 21.70'

60 50 40 30 20 10 0 –10

34 35 36 37 38 39 40

11/24/2008
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emedlin

5/28/99

DETAIL FOR –Y4– DETOUR

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-5

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook F. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No. F-0105

–Y4DET–
PI Sta 39+46.31
△ = 16° 55' 49.2" (LT)
D = 6° 59' 14.2"
L = 242.30'
T = 122.04'
R = 820.00'
SE = NC
DS = 35 mph

–Y4DET–
PI Sta 54+29.33
△ = 31° 12' 20.2" (LT)
D = 7° 09' 43.1"
L = 435.71'
T = 223.41'
R = 800.00'
SE = NC
DS = 35 mph

NAD 83

–Y4DET– PT Sta. 40+66.57

–Y4DET– PC Sta. 52+05.93

MATCHLINE SHEET 2B-5 –Y4DET– STA 40+00.00

MATCHLINE SHEET 2B-6 –Y4DET– STA 54+00.00

UNITED STATES AGRICULTURE
CROATAN NATIONAL FOREST
2

WOODS

GATE

15" SRW PIPE

12" RCP

N 65° 59' 32.2" E

REMOVE SYSTEM WHEN DETOUR REMOVED

TEMP. 2GI
(CONSTRUCT AS –Y4– IS CONSTRUCTED AT INTERSECTION OF –Y4– AND –Y4DET– FILL SLOPES)
REMOVE WHEN DETOUR REMOVED

TEMP. SPECIAL LATERAL 'V' DITCH
SEE DETAIL T1

TEMP. 18"

CL B RIPRAP
EST. 3 TONS
EST. 10 SY GF

REMOVE WHEN DETOUR REMOVED

CL I RIP RAP
EST. 26 TONS
EST. 55 SY GF

REMOVE WHEN DETOUR REMOVED

CLASS B RIPRAP
REMOVE AFTER DETOUR
EST. 2 TONS
EST. 7 SY GF

SEE SHEETS 3D-1THRU 3D-2 FOR DRAINAGE DITCH DETAILS

-Y4- DET

DITCH LEGEND
MEDIAN DITCH
LEFT DITCH
RIGHT DITCH

PI = 41+00.00
EL = 27.50'
K = 198
VC = 80'

(+)0.5238%
(+)0.3182%
(+)0.7230%

END DITCH +25.00 LT 22.47'

PI = 48+40.00
EL = 32.85'
K = 31
VC = 170'

(+)0.7230%
(–)4.6786%

PI = 52+60.00
EL = 13.20'
K = 49
VC = 300'

TEMP. 18"
–Y4DET– STA. 54+00 ELEV. = 11.38'

(–)4.6786%
(+)1.4164%

TEMP. 84"
–Y4DET– STA. 52+57 ELEV. = 6.52'

PROPOSED UNDERCUT

60 50 40 30 20 10 0 –10

40 41 42 43 44 45 46 47 48 49 50 51 52 53 54

11/2/2018
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dmedlin

DETAIL FOR –Y4– DETOUR

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-6

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook F. Anderson

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moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
NC License No. F-0105

NAD 83

–Y4DET– PT Sta. 58+66.87

–Y4DET– PC Sta. 57+13.64

–Y4DET– PT Sta. 56+41.79

–Y4DET– POT Sta. 61+06.87

END CONSTRUCTION
–Y4DET– PT Sta. 58+70.00

DENNIS R. LAUGHLIN
DB 1629 - PG 981
DB 1629 - PG 977
52

UNITED STATES AGRICULTURE
CROATAN NATIONAL FOREST
2

AS –Y4– IS CONSTRUCTED GRADE –Y4DET– SHOULDER TO DRAIN TO STR. #211 (–Y4DET– 55+75 TO 56+84LT)

CONSTRUCT AS –Y4– IS CONSTRUCTED

TEMP. SPECIAL LATERAL "V" DITCH SEE DET. T8

TEMP. TB 2GI

CLASS B RIPRAP ESTIMATIONS ESTIMATIONS

REMOVE SYSTEM WHEN DETOUR REMOVED

TEMP. 15"

N 45° 45' 33.6" E

S 34° 47' 17" W

MATCHLINE SHEET 2B-5 –Y4DET– STA 54+50.00

UNITED STATES AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE SHEETS 3D-1 THRU 3D-2 FOR DRAINAGE DITCH DETAILS

–Y4DET–

PI Sta 54+29.33	PI Sta 57+90.49
Δ = 31° 12' 20.2" (LT)	Δ = 10° 58' 26.6" (RT)
D = 7° 09' 43.1"	D = 7° 09' 43.1"
L = 435.71'	L = 153.23'
T = 223.41'	T = 76.85'
R = 800.00'	R = 800.00'
SE = NC	SE = NC
DS = 35 mph	DS = 35 mph

-Y4- DET

DITCH LEGEND
MEDIAN DITCH
LEFT DITCH
RIGHT DITCH

END GRADE
–Y4DET– STA 58+70.00
ELEV = 17.59'

PI = 55+35.00
EL = 17.10'
K = 46
VC = 80'

PI = 56+95.00
EL = 16.55'
K = 86
VC = 80'

TEMP. 18"
–Y4DET– STA. 54+00 ELEV. = 11.38'

(+)1.4164%
(–)0.3385%
(+) 2.1100%
(+) 0.6000%
(–)0.3385%
(+)0.5923%

BEGIN DITCH +00.00 LT 12.93'
+00.00 LT 15.04'
END DITCH +75.00 LT 15.49'

60 50 40 30 20 10 0 –10
54 55 56 57 58 59 60

5/28/99
11/2/2018
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amadison

BRIDGE SKETCHES

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

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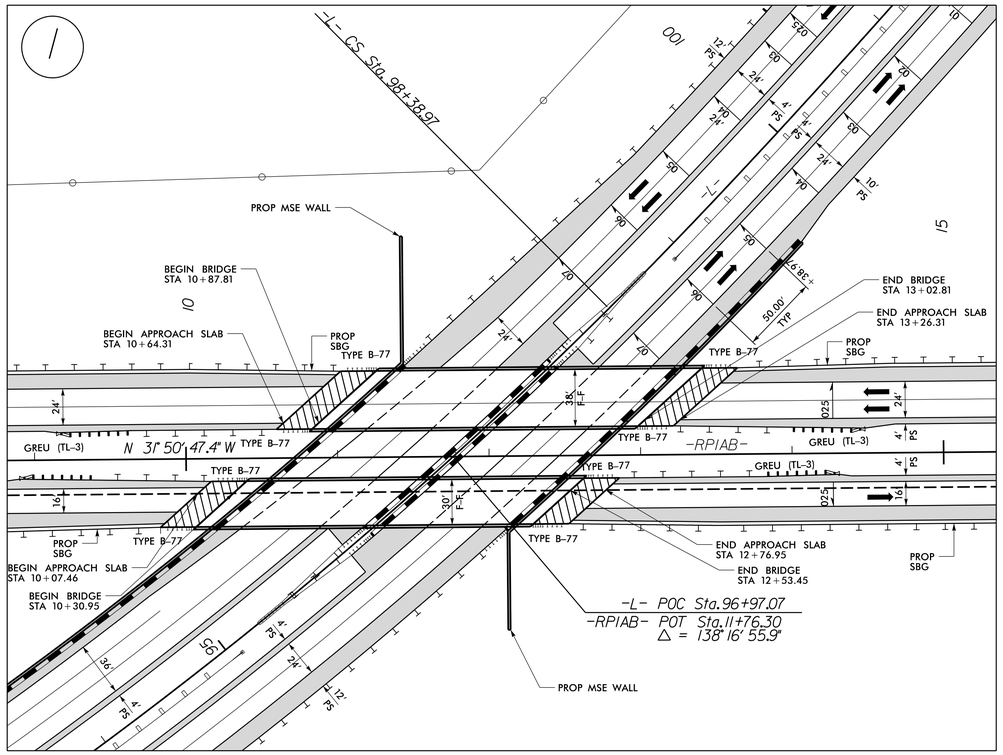
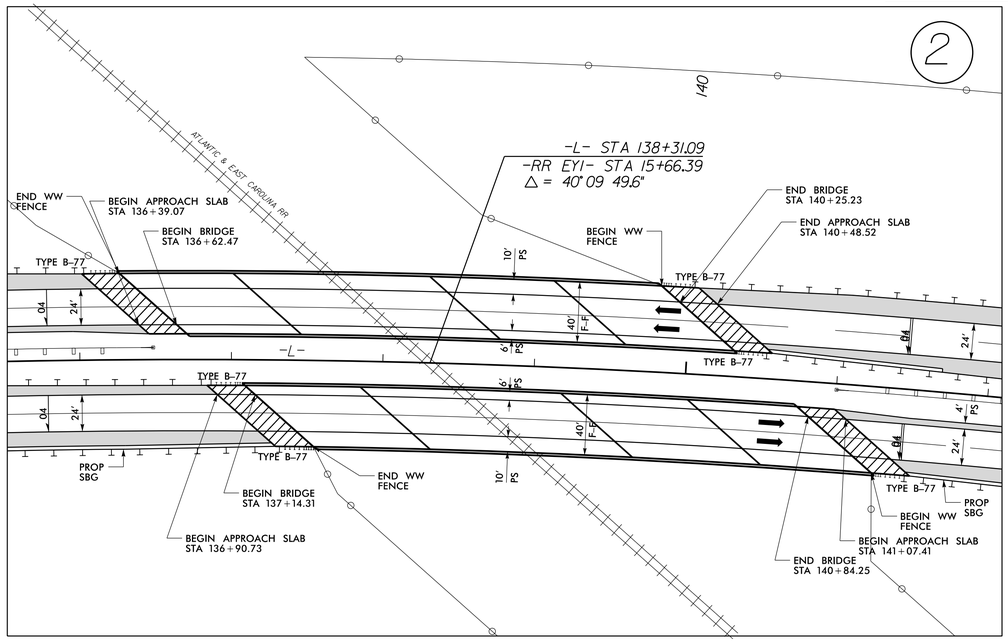
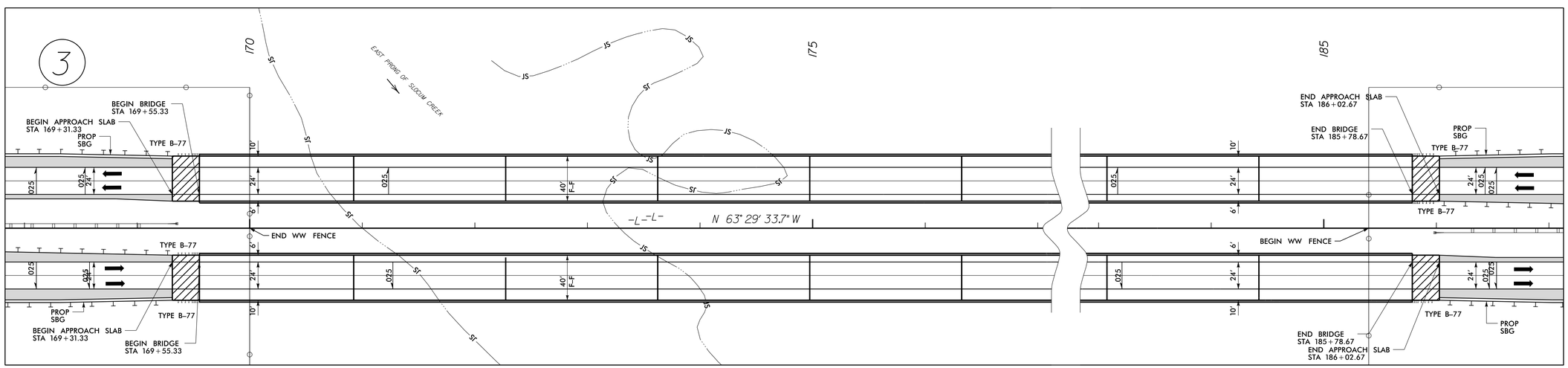


DETAIL SHOWING PAVEMENT & BRIDGE RELATIONSHIP FOR -RP1AB- OVER -L-



DETAIL SHOWING PAVEMENT & BRIDGE RELATIONSHIP FOR -L- OVER ATLANTIC AND EAST CAROLINA RAILROAD



DETAIL SHOWING PAVEMENT & BRIDGE RELATIONSHIP FOR -L- OVER EAST PRONG OF SLOCUM CREEK

REVISIONS

8/17/99

11/2/2018
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dmadlin

BRIDGE SKETCHES

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

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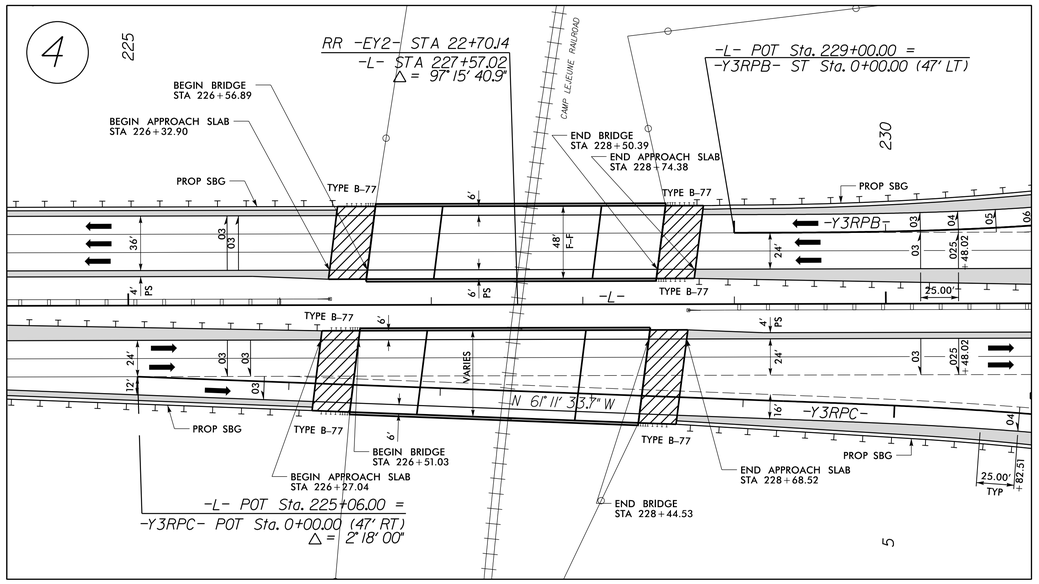
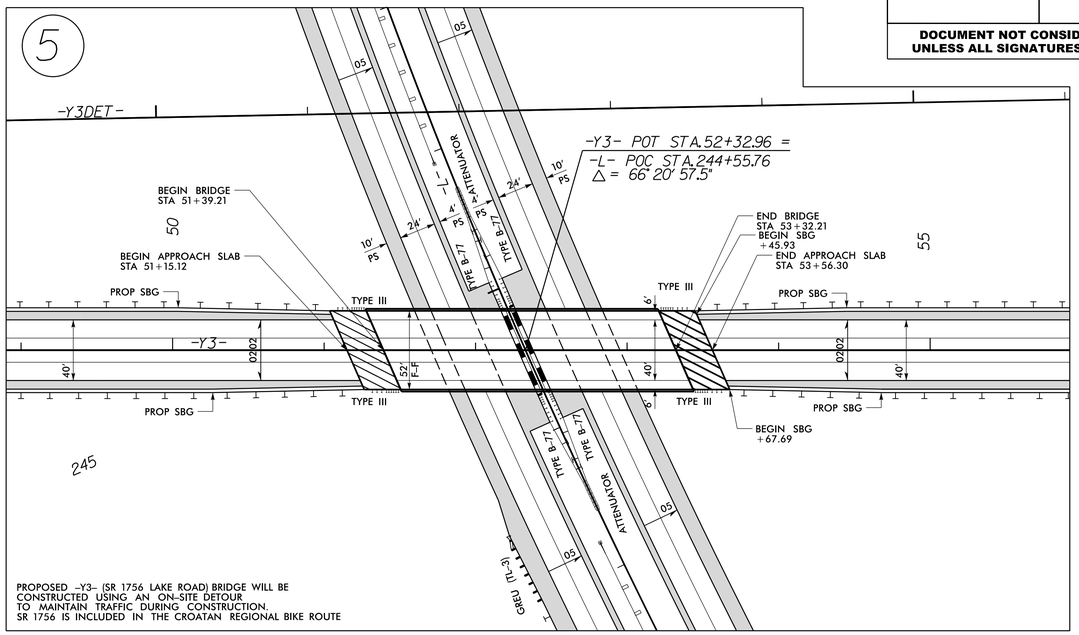
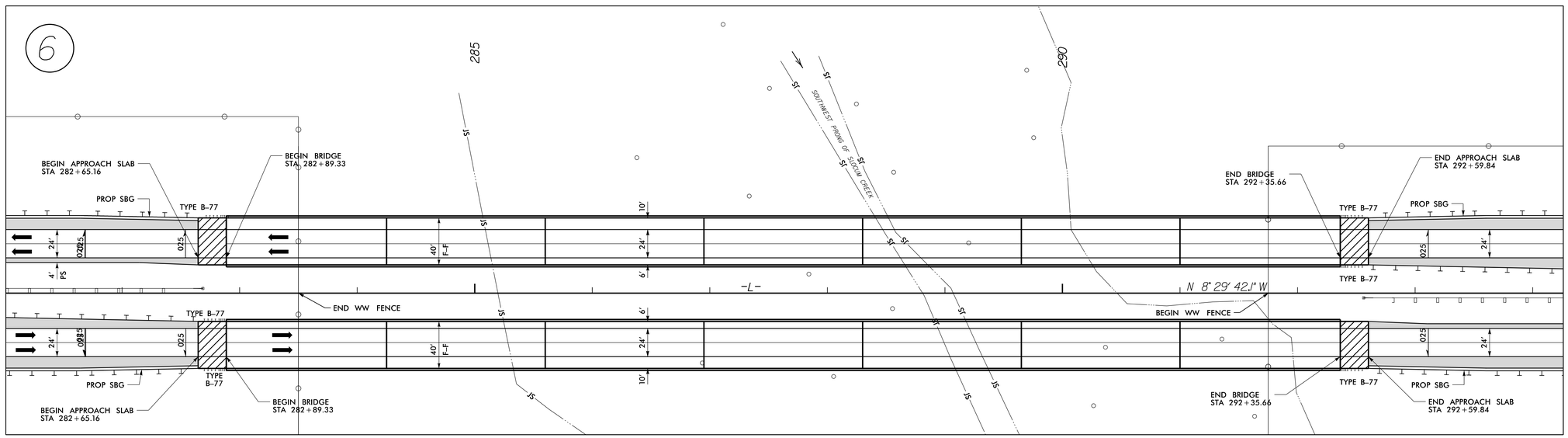


DETAIL SHOWING PAVEMENT & BRIDGE RELATIONSHIP
FOR -L- OVER CAMP LEJEUNE RAILROAD



DETAIL SHOWING PAVEMENT & BRIDGE RELATIONSHIP
FOR -Y3-(SR 1756) OVER -L-



DETAIL SHOWING PAVEMENT & BRIDGE RELATIONSHIP
FOR -L- OVER SOUTHWEST PRONG OF SLOCUM CREEK

REVISIONS

8/17/99

1/2/2018
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smcallin

BRIDGE SKETCHES

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2B-9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER J. R. REID

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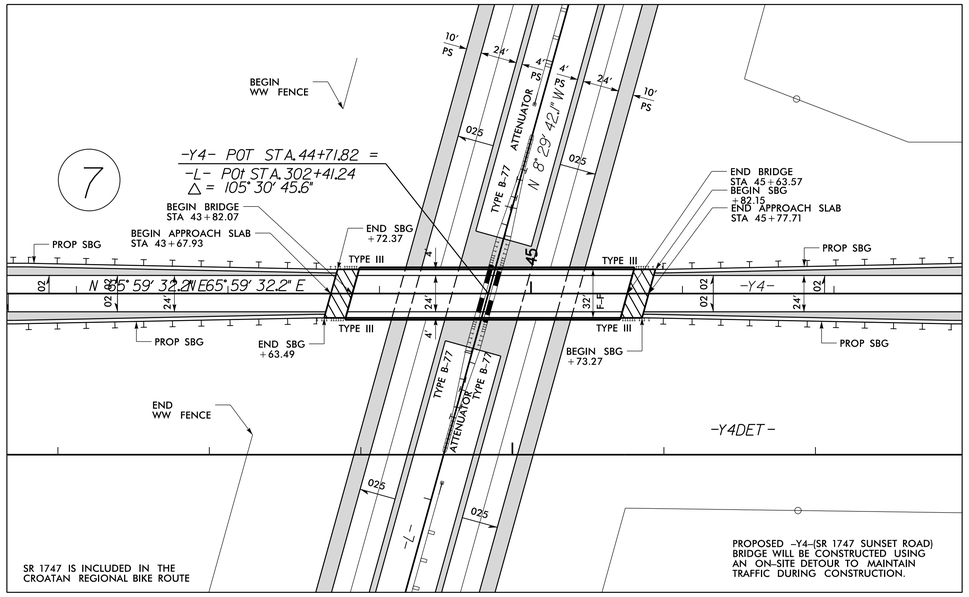
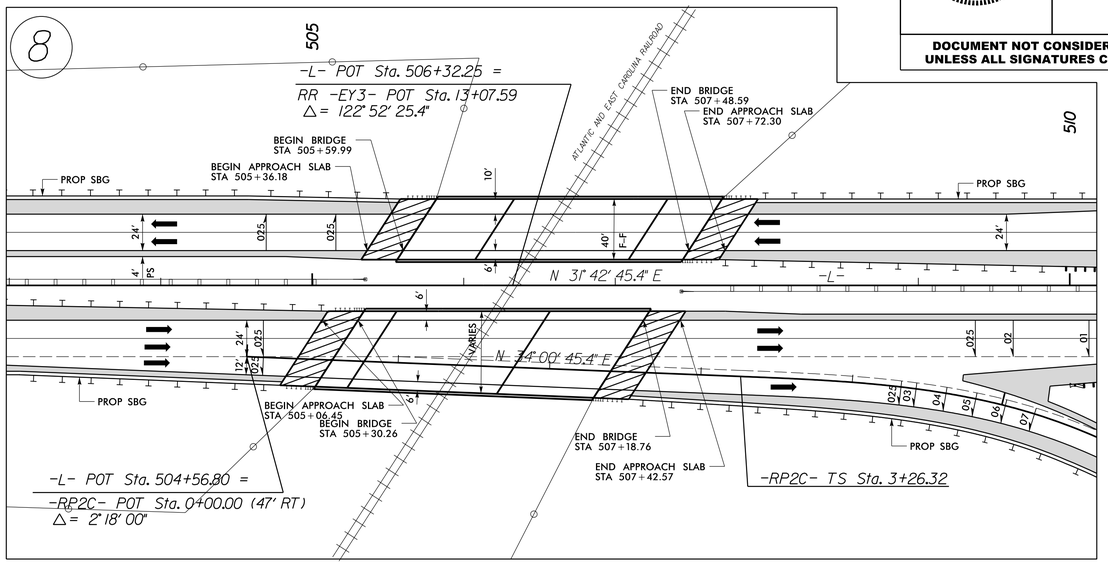
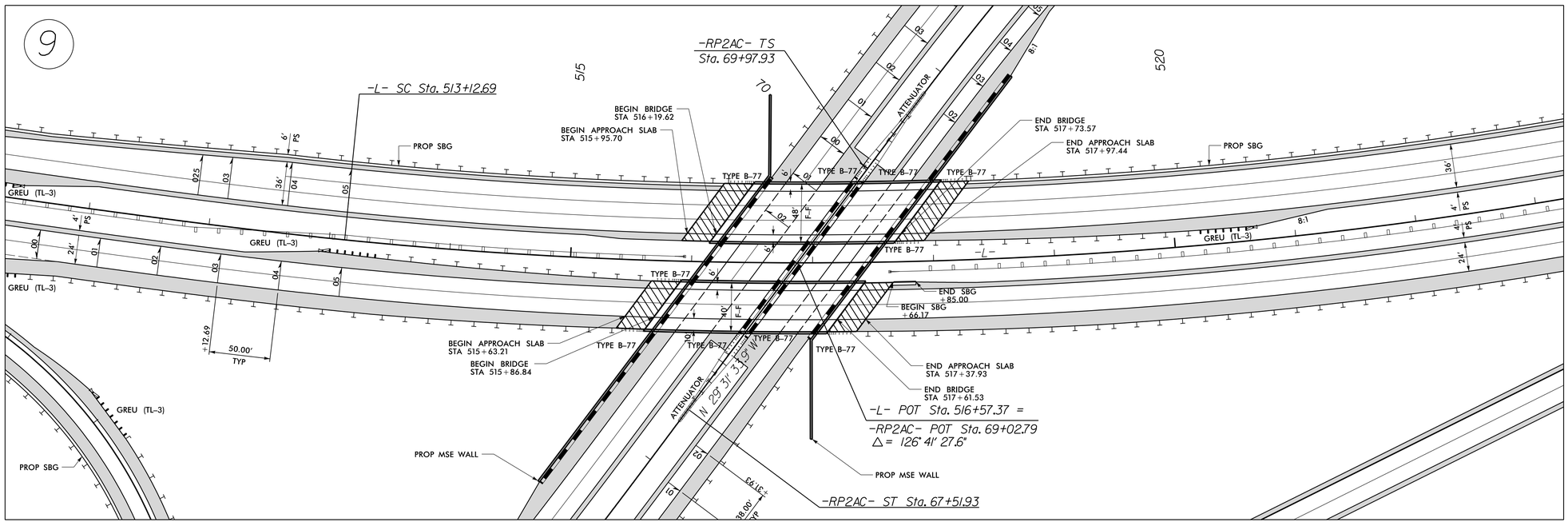


DETAIL SHOWING PAVEMENT & BRIDGE RELATIONSHIP FOR -Y4-(1747) OVER -L-



DETAIL SHOWING PAVEMENT & BRIDGE RELATIONSHIP FOR -L- OVER ATLANTIC AND EAST CAROLINA RAILROAD



DETAIL SHOWING PAVEMENT & BRIDGE RELATIONSHIP FOR -L- OVER -RP2AC-

REVISIONS

8/17/99

11/2/2018
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smpollin

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2C-1

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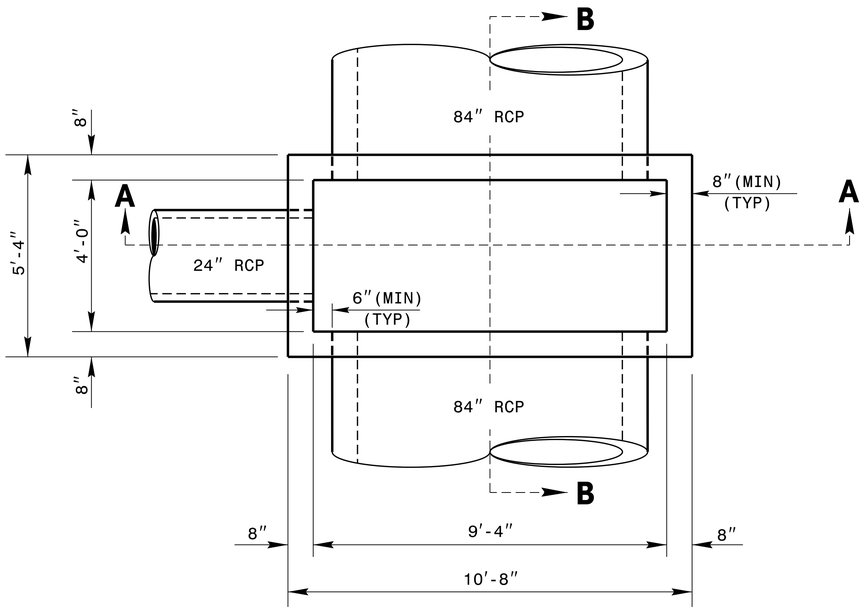


PLAN VIEW

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB, SEE STD. DRAWING 840.00.

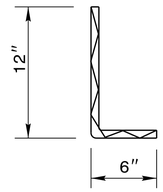
CHAMFER ALL EXPOSED CORNERS 1".

2" MINIMUM CONCRETE COVERAGE ON ALL REBAR.

"Z" BAR TO BE USED TO REINFORCE OPENING AROUND 84 INCH WSP.

HEIGHT DIMENSIONS MAY BE ADJUSTED DOWN FOR SMALLER PIPES AS DIRECTED BY THE ENGINEER.

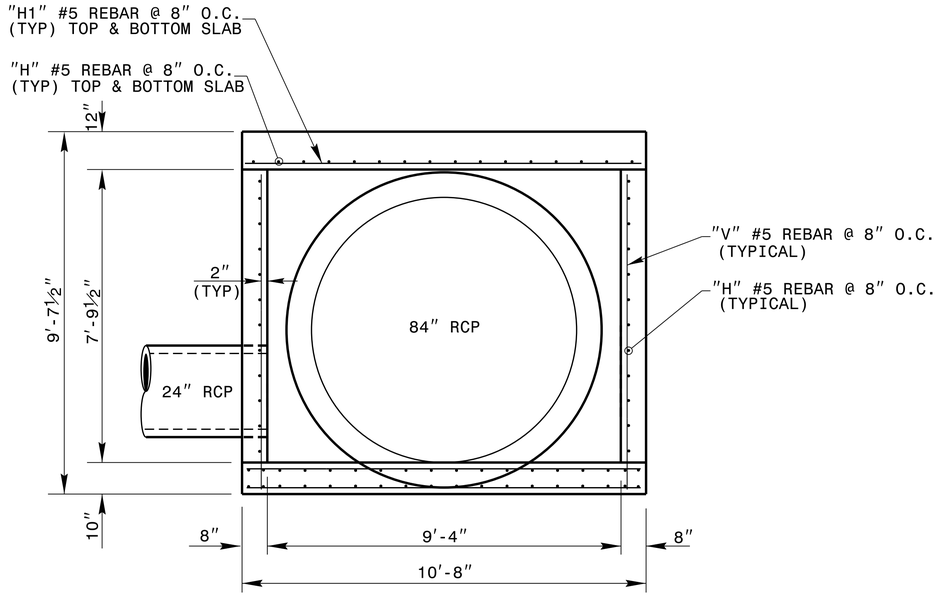
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 8470.00.



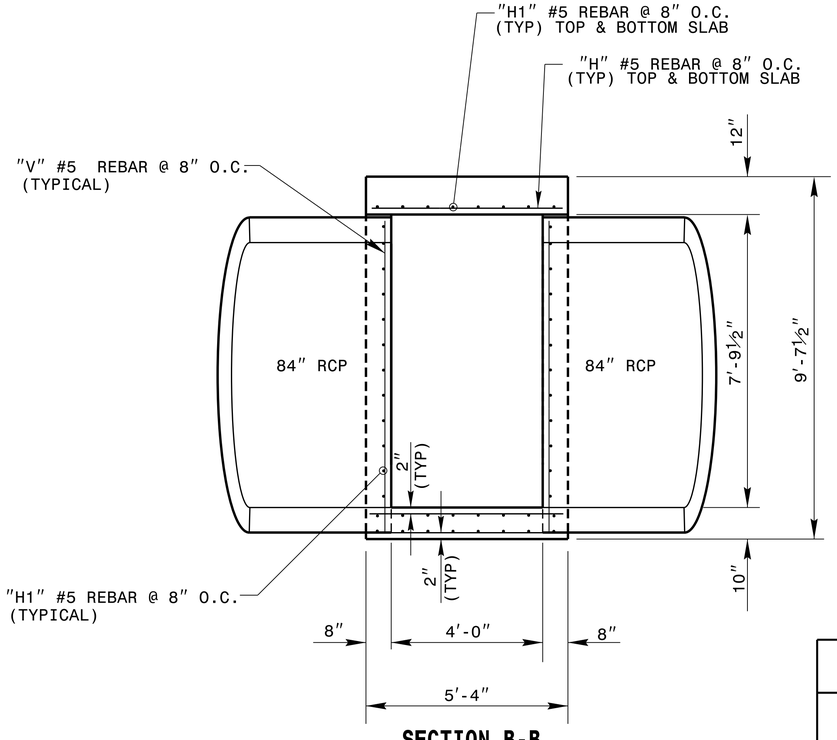
DOWEL

BILL OF MATERIALS

BAR	NO.	SIZE	LENGTH	WEIGHT
H	80	#5	5'-0"	417
H1	48	#5	10'-4"	517
V	48	#5	8'-5"	421
Z	7	#5	4'-0"	29
TOTAL REINF. STEEL (LBS.)				1416
TOTAL CONC. (CU. YDS.)				9.2
* NO DEDUCTION HAS BEEN MADE FOR PIPES				



SECTION A-A



SECTION B-B

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOWERTON

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

JUNCTION BOX

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: kkempf DATE: 10/11/18
CHECKED BY: _____ DATE: _____
FILE SPEC.: special details/kkempf/english/RI015_jb 84in.dgn

11-OCT-2018 14:6
S:\Contracts\Special Details\kkempf\english\RI015_jb 84in.dgn
kkempf AT CSD-292596

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2C-2

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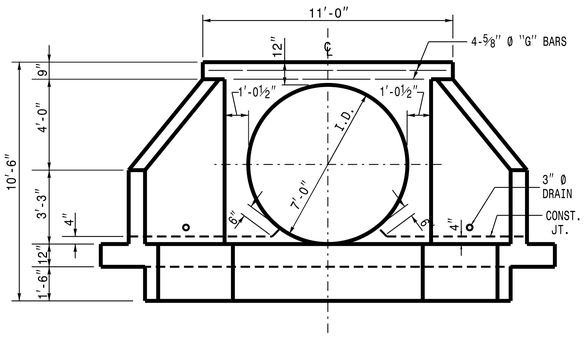
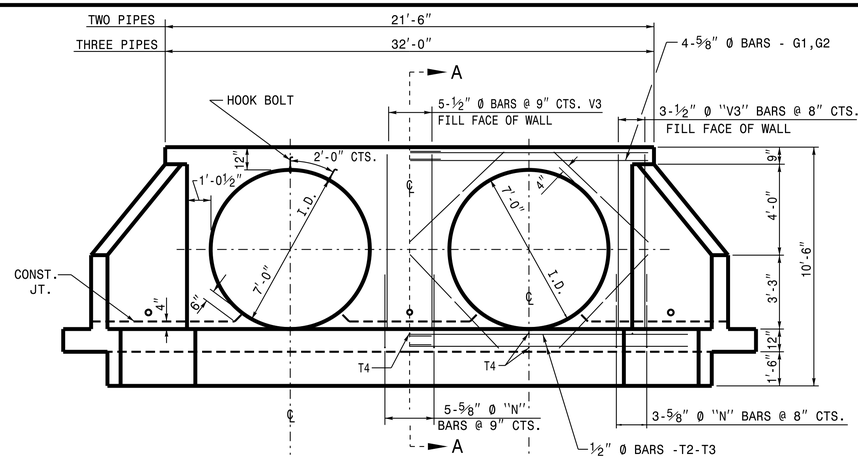
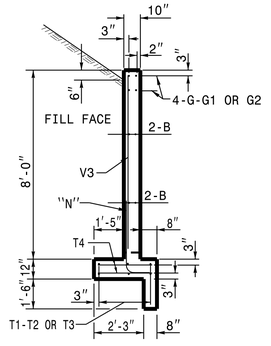


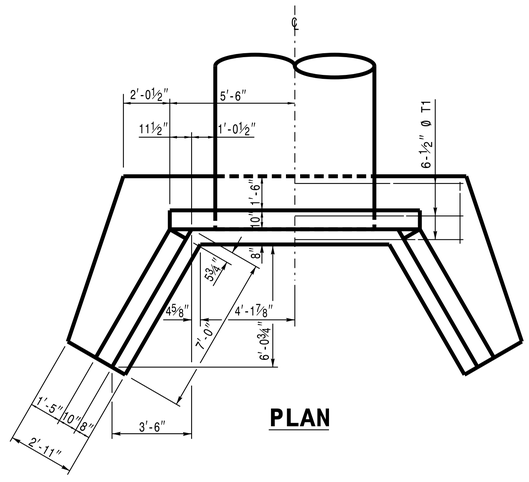
END ELEVATION



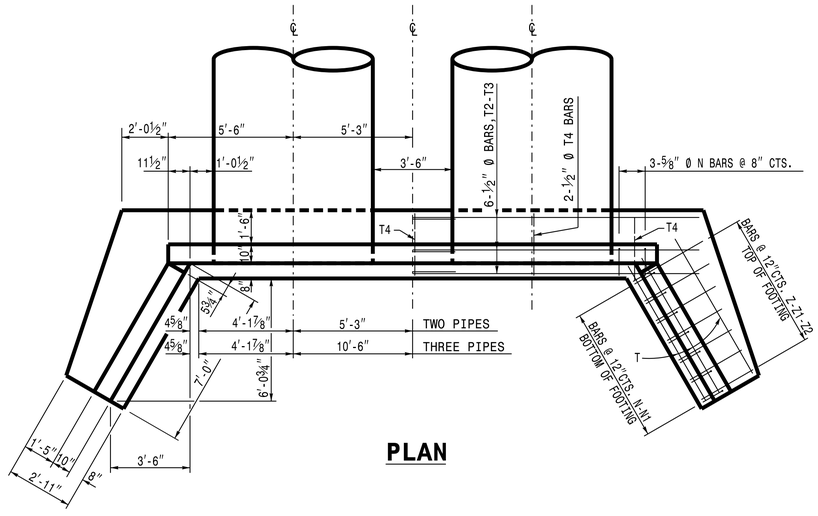
END ELEVATION



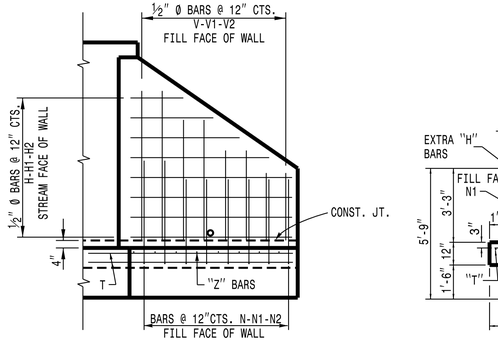
SECTION A-A FOR ALL ENDWALLS



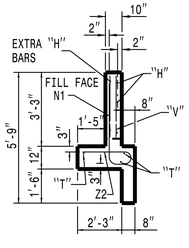
PLAN



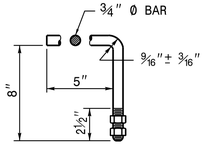
PLAN



ELEVATION OF WING SHOWING REINFORCEMENT

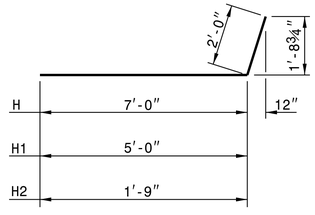


END OF WING

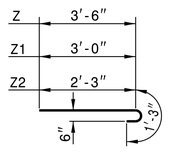


HOOK BOLT

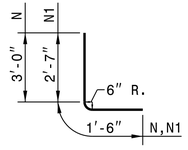
HOOK BOLTS (ANCHORS SHALL BE CONSTRUCTED AT 2'-0" CTS. ALONG THE CIRCUMFERENCE OF THE 7'-0" CSPA. THE HOOK BOLTS SHALL BE EMBEDDED IN THE CONCRETE ENDWALL 8" IN DEPTH. THE GALVANIZED¾" DIA. HOOK BOLTS MUST MEET ASTM A-307 OR ASTM A-836. BOTH BOLTS AND NUTS MUST BE IN ACCORDANCE WITH ASTM A-153 FOR GALVANIZING.



BARS H-H1-H2



BARS Z-Z1-Z2



BARS N-N1

NOTES:

ALL CONCRETE TO BE CLASS "A".

ALL REINFORCING STEEL SHALL BE ASTMA615-GRADE 60.

ALL REINFORCING STEEL SHALL BE DEFORMED BARS. WHERE SPLICING OF REINFORCMENT IS NECESSARY, BARS ARE TO BE LAPPED 45 DIAMETERS. ALL DIMENSIONS RELATIVE TO REINFORCEMENT ARE TO CENTERS OF BARS.

THE FOOTING, CURTAIN WALL AND 4" OF WALL ARE TO BE POURED IN ONE OPERATION ALLOWING NO TIME FOR INITIAL SET TO TAKE PLACE BETWEEN THEM. THE REMAINING WALL SHALL THEN BE POURED IN ONE OPERATION.

ALL EXPOSED CORNERS ARE TO BE CHAMFERED 1".

3" DIAMETER DRAINS SHALL BE PLACED IN WALL AS SHOWN AND BE 6" ABOVE NORMAL FLOW LINE.

ALL MATERIAL AND WORKMANSHIP AS PER N.C.DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON

BILL OF MATERIAL FOR ONE ENDWALL

REINFORCING STEEL			1 PIPE		2 PIPES		3 PIPES	
BAR	SIZE	LENGTH	NO.	WEIGHT	NO.	WEIGHT	NO.	WEIGHT
B	#4	6'-0"	8	32	16	64	24	96
G	#5	10'-9"	4	45	-	-	-	-
G1	#5	11'-9"	-	-	8	98	-	-
G2	#5	17'-0"	-	-	-	-	8	142
H	#4	9'-0"	10	60	10	60	10	60
H1	#4	7'-0"	6	28	6	28	6	28
H2	#4	3'-9"	4	10	4	10	4	10
N	#5	4'-6"	10	47	15	70	20	94
N1	#4	4'-1"	10	27	10	27	10	27
T	#4	6'-6"	6	26	6	26	6	26
T1	#4	15'-0"	6	60	-	-	-	-
T2	#4	13'-9"	-	-	12	110	-	-
T3	#4	19'-0"	-	-	-	-	12	152
T4	#4	2'-9"	4	7	7	13	10	18
V	#4	5'-9"	6	23	6	23	6	23
V1	#4	4'-6"	6	18	6	18	6	18
V2	#4	2'-9"	8	15	8	15	8	15
V3	#4	7'-6"	6	30	11	55	16	80
Z	#5	4'-9"	4	20	4	20	4	20
Z1	#4	4'-3"	4	11	4	11	4	11
Z2	#4	3'-6"	6	14	6	14	6	14
TOTAL REINF. STEEL (lbs.)			473		662		834	
CLASS "A" CONC. (cu. yds.)			7.9		10.8		13.8	

CONTRACT STANDARDS & DEVELOPMENT UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

DETAIL OF REINFORCED CONCRETE ENDWALL FOR 84" DIAMETER PIPE - 90° SKEW

ORIGINAL BY: R.S.WICKER DATE: 6-46
MODIFIED BY: R.E.D.&T.S.S. DATE: 6-96 & 5-00
CHECKED BY: DATE:
FILE SPEC.: details/nbritt/english/hydro/84 endwall 90sk.dgn

U-OCT-2018 14:28
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kkempf AT CSD-292596

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2C-3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howard

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

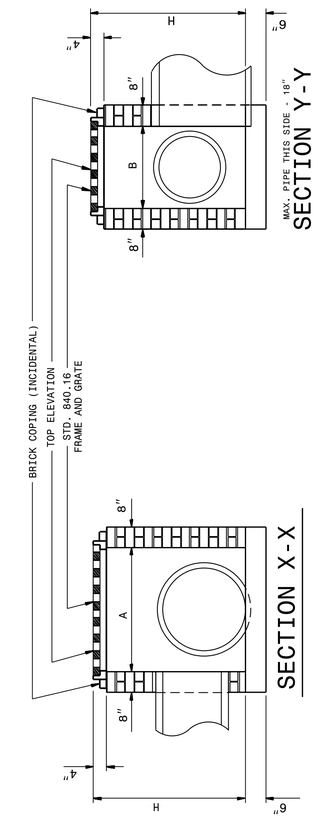
ENGLISH DETAIL DRAWING FOR

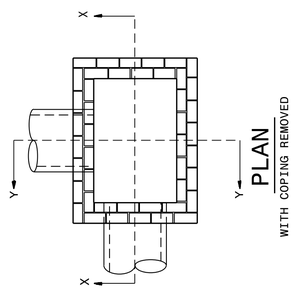
MINIMUM DEPTH BRICK DROP INLET

12" THRU 30" PIPE

SHEET 1 OF 1 **840D15**

GENERAL NOTES:
MORTAR JOINTS ½" TO ⅛" THICK.
USE CLASS "B" CONCRETE THROUGHOUT.
USE FORMS FOR CONSTRUCTION OF THE BOTTOM SLAB.
DEDUCT FOR PIPE(S) FROM TOTAL CU. YDS. OF BRICK MASONRY.
USE BRICK OR CONCRETE BLOCK WHICH COMPLIES WITH THE REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
CONSTRUCT WITH PIPE CROWNS MATCHING.
DO NOT USE BRICK MASONRY DROP INLET IN LOCATIONS SUBJECT TO TRAFFIC.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.





DIMENSIONS AND QUANTITIES FOR DROP INLET(BASED ON MIN. HEIGHT, H)

PIPE	DIMENSIONS OF BOX & PIPE SPAN	WIDTH	MIN. HEIGHT H	CUBIC YARDS CONCRETE BOTTOM SLAB	CUBIC YARDS BRICK MASONRY WALL PER FOOT HT.	CUBIC YARDS BRICK MASONRY TOTAL BRICK MASONRY FOR MIN. HEIGHT, H	DEDUCTIONS FOR ONE PIPE C.S.	DEDUCTIONS FOR ONE PIPE R.C.
D	A	B	H	BOTTOM SLAB	WALL PER FOOT HT.	TOTAL BRICK MASONRY FOR MIN. HEIGHT, H	C.S.	R.C.
12"	3'-0"	2'-0"	1'-8"	0.268	0.313	0.470	0.020	0.032
15"			1'-11"	0.268	0.313	0.548	0.031	0.047
18"			2'-1"	0.268	0.313	0.626	0.044	0.065
24"			2'-9"	0.268	0.313	0.835	0.078	0.113
30"	3'-0"	2'-0"	3'-2"	0.268	0.313	0.991	0.122	0.170

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

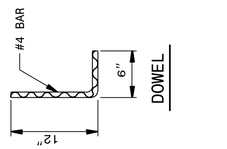
ENGLISH DETAIL DRAWING FOR

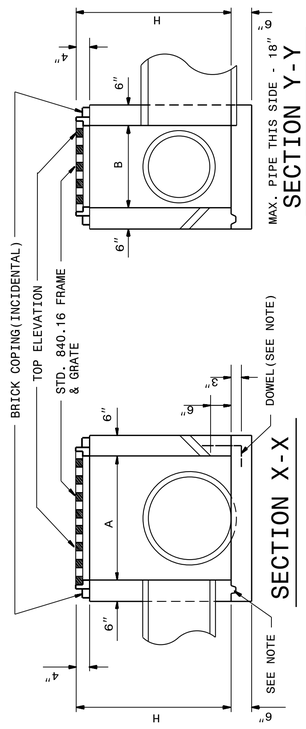
MINIMUM DEPTH CONCRETE DROP INLET

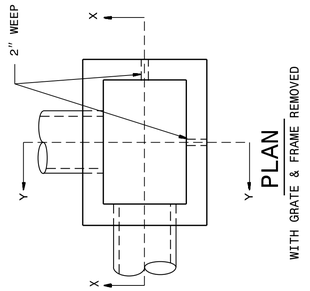
12" THRU 30" PIPE

SHEET OF **840D14**

GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
CONSTRUCT WITH PIPE CROWNS MATCHING.
INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.
INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.







DIMENSIONS AND QUANTITIES FOR DROP INLET(BASED ON MIN. HEIGHT, H)

PIPE	DIMENSIONS OF BOX & PIPE SPAN	WIDTH	MIN. HEIGHT H	CUBIC YARDS CONC. IN BOX BOTTOM SLAB	CUBIC YARDS CONC. IN BOX WALL PER FT. HT.	CUBIC YARDS CONC. IN BOX TOTAL CONCRETE FOR MIN. HEIGHT, H	DEDUCTIONS FOR ONE PIPE C.M.	DEDUCTIONS FOR ONE PIPE R.C.
D	A	B	H	BOTTOM SLAB	WALL PER FT. HT.	TOTAL CONCRETE FOR MIN. HEIGHT, H	C.M.	R.C.
12"	3'-0"	2'-0"	1'-8"	0.222		0.555	0.015	0.026
15"			1'-11"	0.222		0.611	0.023	0.036
18"			2'-1"	0.222		0.667	0.033	0.049
24"			2'-9"	0.222		0.814	0.059	0.085
30"	3'-0"	2'-0"	3'-2"	0.222		0.925	0.092	0.127

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

MINIMUM DEPTH CONCRETE DROP INLET

12" THRU 30" PIPE

SHEET 1 OF 1 **840D14**

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD. 840.14 DATE:
MODIFIED BY: E.E. WARD DATE: 3-4-02
CHECKED BY: DATE:
FILE SPEC.:

U-OCT-2018 14:37
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kkempf
AT CSD-292596

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2C-4

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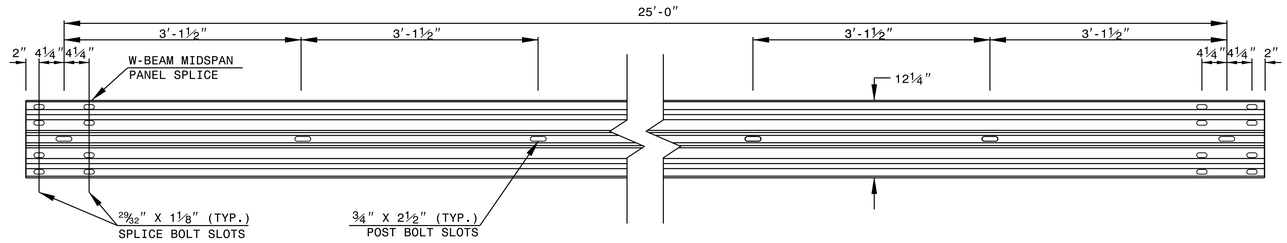
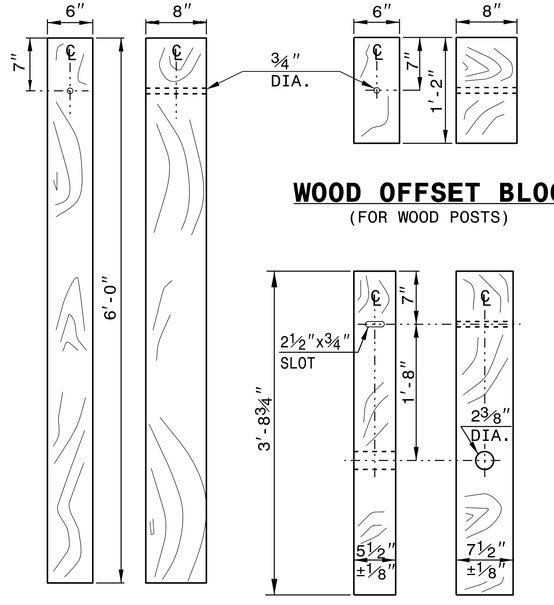
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



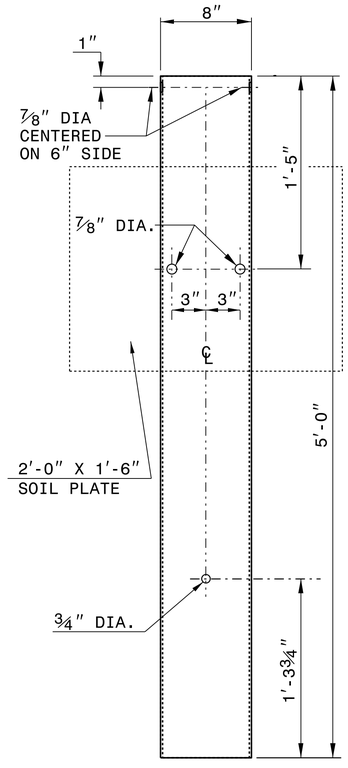
STANDARD W-BEAM GUARDRAIL



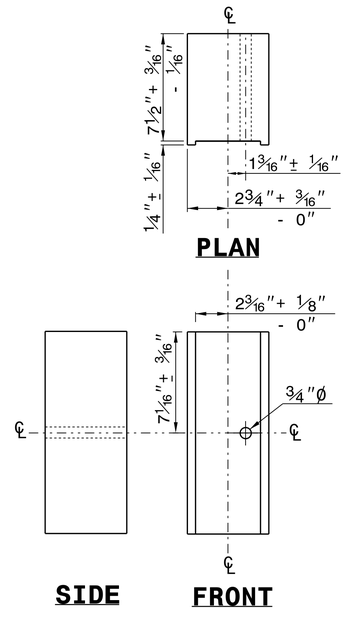
WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STANDARD LINE POST

SHORT WOOD BREAKAWAY POST



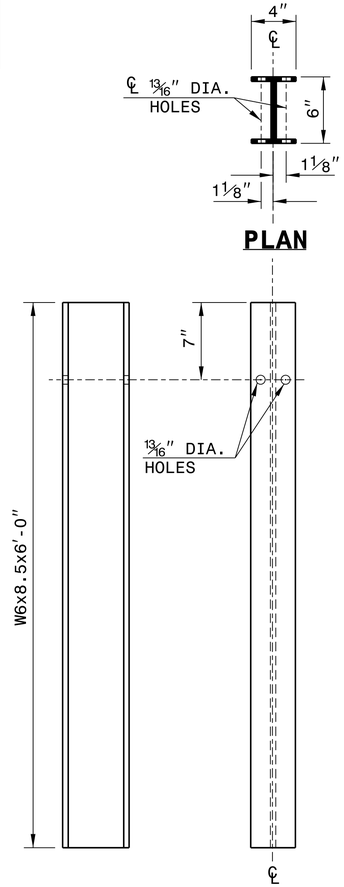
STEEL TUBE
TS 6"x8"x0.1875"



PLAN

SIDE **FRONT**

ROUTED OFFSET BLOCK



PLAN

SIDE **FRONT**

"W6" STEEL POST

SYSTEM PARTS

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOWERTON

CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J.HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2C-5

STATE OF
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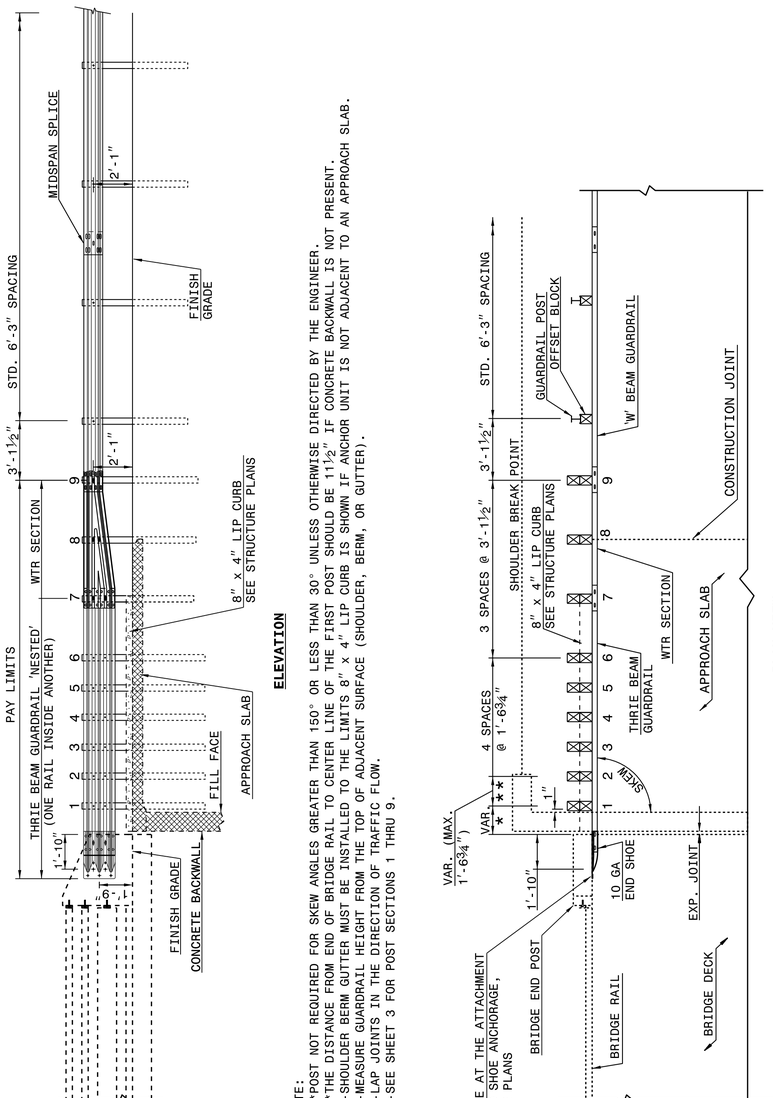
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03



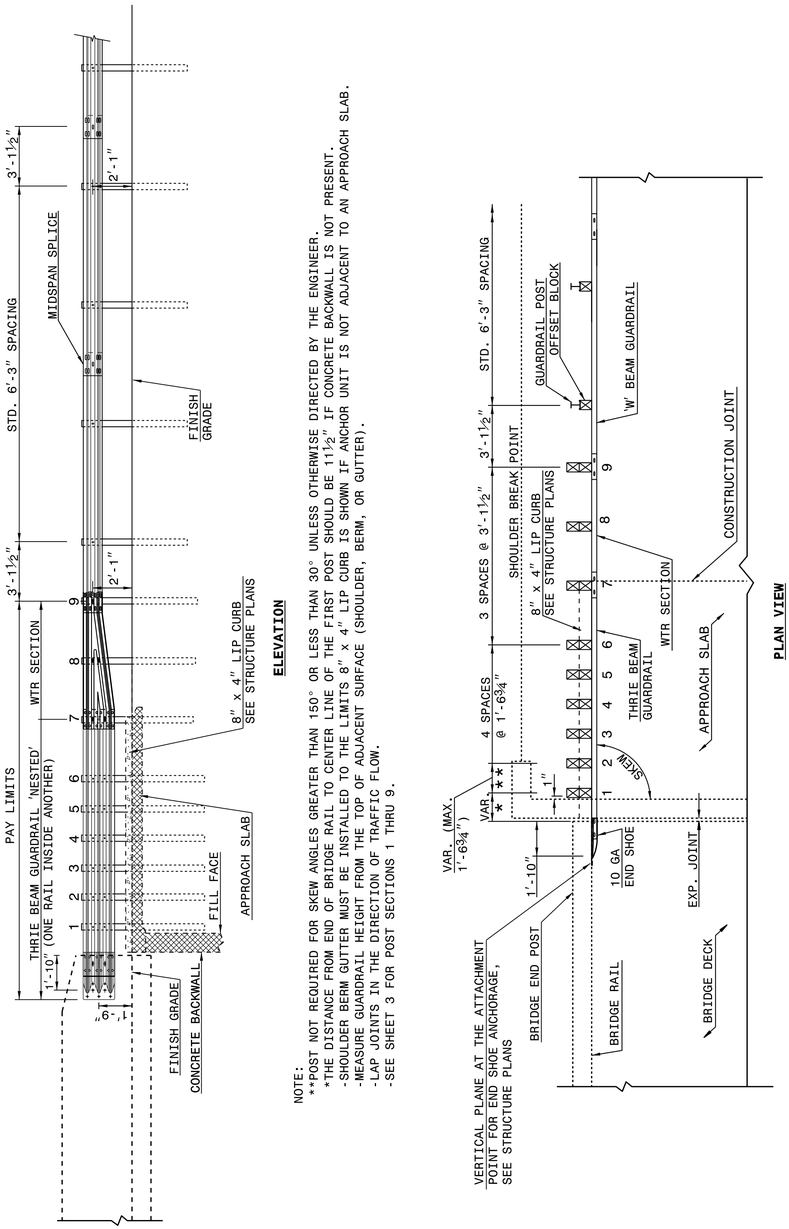
NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03



NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton

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CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

14-DEC-2017 10:36
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jhowerton AT CSD-2425965

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2D-1
R/W SHEET NO.	

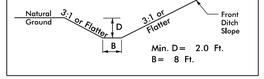
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook F. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAINAGE DITCH DETAILS

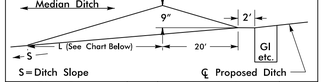
DETAIL A
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 2.0 Ft.
B= 8 Ft.

FROM STA. 32+60 TO STA. 64+74.20 –L– (LT)
FROM STA. 0+00 TO STA. 7+00 –RP1B– (LT)
FROM STA. 10+75 TO STA. 29+00 –RP1CD– (LT)

DETAIL B
FALSE SUMP
(Not to Scale)

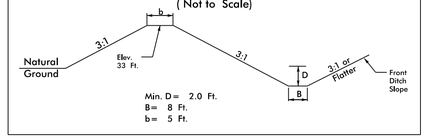


S = Ditch Slope ℄ Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

SEE PLANSHEETS FOR LOCATIONS

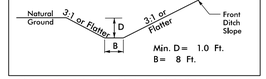
DETAIL C
SPECIAL CUT DITCH W/EARTHEN BERM
(Not to Scale)



Min. D= 2.0 Ft.
B= 8 Ft.
b= 5 Ft.

FROM STA. 79+50 TO STA. 86+87 –L– (LT)

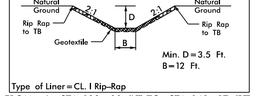
DETAIL D
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 8 Ft.

FROM STA. 74+26 TO STA. 76+06.30 –L– (RT)
FROM STA. 0+00 TO STA. 7+50 –RP1CD– (RT)
FROM STA. 330+40 TO STA. 336+35 –L– (LT)
FROM STA. 330+17 TO STA. 335+00 –L– (RT)
FROM STA. 356+50 TO STA. 361+50 –L– (LT)

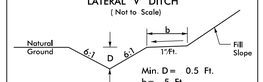
DETAIL E
STANDARD BASE DITCH
(Not to Scale)



Min. D = 3.5 Ft.
B = 12 Ft.
Type of Liner = CL. I Rip–Rap

FROM –L– STA. 138+00 (LT) TO STA. 140+17 (RT)

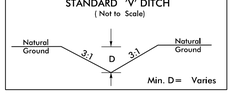
DETAIL F
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 0.5 Ft.
b= 5 Ft.

FROM –L– STA. 150+50 TO STA. 154+76 (RT)

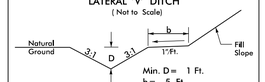
DETAIL G
STANDARD 'V' DITCH
(Not to Scale)



Min. D= Varies

FROM –L– STA. 247+15 TO STA. 247+24 (RT)

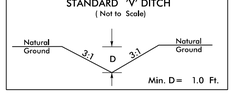
DETAIL H
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1 Ft.
b= 5 Ft.

FROM STA. 165+23 TO STA. 169+60 –L– (RT)
FROM STA. 219+40 TO STA. 223+55 –L– (LT)
FROM STA. 363+57 TO STA. 364+30 –L– (RT)

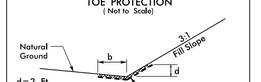
DETAIL I
STANDARD 'V' DITCH
(Not to Scale)



Min. D= 1.0 Ft.

FROM STA. 169+60 TO STA. 170+50 –L– (RT)
FROM STA. 550+75 (–213') TO STA. 551+46 (–182') –L– (LT)

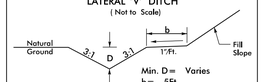
DETAIL J
TOE PROTECTION
(Not to Scale)



d= 2 Ft.
b= 3 Ft.
Type of Liner= Class B Rip–Rap

FROM STA. 214+74 TO STA. 218+15 –L– (RT)
FROM STA. 16+60 TO STA. 19+49 –Y3RPB– (LT)
FROM STA. 271+00 TO STA. 273+10 –L– (RT)
FROM STA. 292+34 TO STA. 293+00 –L– (LT)
FROM STA. 470+00 TO STA. 471+20 –L– (LT)
FROM STA. 470+00 TO STA. 471+00 –L– (RT)

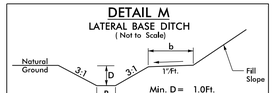
DETAIL L
LATERAL 'V' DITCH
(Not to Scale)



Min. D= Varies
b= 5Ft.

FROM STA. 13+31 TO STA. 16+56 –Y3RPB– (LT)
FROM STA. 267+67 TO STA. 271+88 –L– (RT)

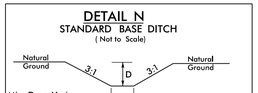
DETAIL M
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.0Ft.
B= 2Ft.
b= 5Ft.

FROM STA. 60+31 TO STA. 64+79 –Y3– (RT)
FROM STA. 250+09 TO STA. 253+89 –L– (RT)

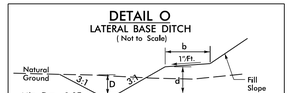
DETAIL N
STANDARD BASE DITCH
(Not to Scale)



Min. D= Varies
B= 3Ft.

FROM STA.50+30 TO STA. 51+45 –Y3– (RT)
FROM STA. 52+76 TO STA. 53+50 –Y4– (LT)
FROM STA. 56+71 TO STA. 56+83 –Y4– (RT)

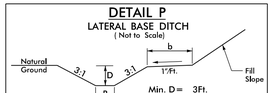
DETAIL O
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.0Ft.
B= 3Ft.
b= 5Ft.
Fill above N.G. as needed to provide min. d=2.0Ft.

FROM STA. 47+45 TO STA. 50+30 –Y3– (RT)

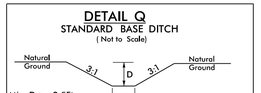
DETAIL P
LATERAL BASE DITCH
(Not to Scale)



Min. D= 3Ft.
B= 3Ft.
b= 5Ft.

FROM STA. 53+03 TO STA. 60+30 –Y3– (LT)

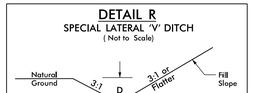
DETAIL Q
STANDARD BASE DITCH
(Not to Scale)



Min. D= 2.5Ft.
B= 3Ft.

FROM STA. 52+60 TO STA. 52+92 –L– (LT)

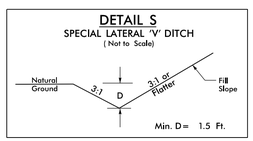
DETAIL R
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.0Ft.

FROM STA. 68+34 TO STA. 73+89 –Y3– (LT)
FROM STA. 246+22 TO STA. 248+00 –L– (LT)
FROM STA. 58+00 TO STA. 59+25 –Y4– (RT)
FROM STA. 469+33 TO STA. 470+27 –L– (LT)
FROM STA. 529+15 TO STA. 530+50 –L– (LT)
FROM STA. 531+50 TO STA. 533+55 –L– (LT)
FROM STA. 526+50 TO STA. 530+14 –L– (RT)
FROM STA. 32+80.84 TO STA. 33+38 –SERVRD– (RT)
FROM STA. 35+17 TO STA. 37+10 –SERVRD– (RT)
FROM STA. 91+56 TO STA. 92+95 –RP2A– (LT)
FROM STA. 42+50 TO STA. 48+90 –SERVRD– (RT)
FROM STA. 53+92 TO STA. 56+47 –SERVRD– (RT)
FROM STA. 558+00 TO STA. 559+00 –L– (LT)
FROM STA. 10+25 TO STA. 14+50 –SERVEXT– (LT)
FROM STA. 53+92 TO STA. 56+47 –SERVRD– (RT)
FROM STA. 552+25 TO STA. 556+50 –L– (LT)
FROM STA. 16+00 TO STA. 17+80 –SERVEXT– (LT)

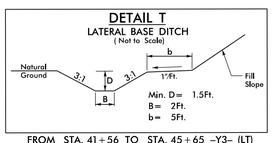
DETAIL S
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.5 Ft.

FROM STA. 65+16 TO STA. 73+89 –Y3– (RT)
FROM STA. 65+00 TO STA. 67+86 –Y3– (LT)
FROM STA. 63+00 TO STA. 65+86 –RP2AC– (RT)
FROM STA. 53+50 TO STA. 58+30 –RP2AC– (RT)
FROM STA. 37+45 TO STA. 42+50 –SERVRD– (RT)
FROM STA. 48+90 TO STA. 53+92 –SERVRD– (RT)

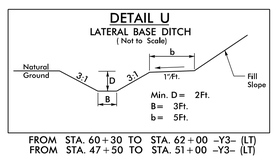
DETAIL T
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5Ft.
B= 2Ft.
b= 5Ft.

FROM STA. 41+56 TO STA. 45+65 –Y3– (LT)
FROM STA. 37+00 TO STA. 43+34 –Y4– (LT)
FROM STA. 38+00 TO STA. 43+50 –Y4– (RT)
FROM STA. 10+52 TO STA. 12+00 –Y4DR– (LT)
FROM STA. 45+26 TO STA. 49+73 –Y4– (RT)
FROM STA. 48+30 TO STA. 49+74 –Y4– (RT)

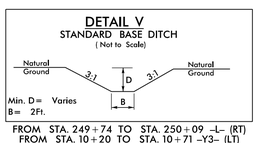
DETAIL U
LATERAL BASE DITCH
(Not to Scale)



Min. D= 2Ft.
B= 3Ft.
b= 5Ft.

FROM STA. 60+30 TO STA. 62+00 –Y3– (LT)
FROM STA. 47+50 TO STA. 51+00 –Y3– (LT)

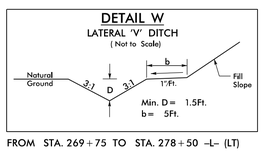
DETAIL V
STANDARD BASE DITCH
(Not to Scale)



Min. D= Varies
B= 2Ft.

FROM STA. 249+74 TO STA. 250+09 –L– (RT)
FROM STA. 10+20 TO STA. 10+71 –Y3– (LT)
FROM STA. 377+78.7 TO STA. 377+97 –L– (LT)
FROM STA. 379+47 TO STA. 380+98.5 –L– (RT)

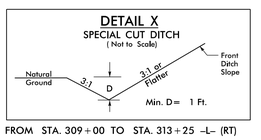
DETAIL W
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.5Ft.
b= 5Ft.

FROM STA. 269+75 TO STA. 278+50 –L– (LT)

DETAIL X
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1 Ft.

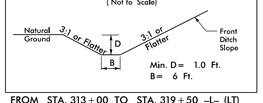
FROM STA. 309+00 TO STA. 313+25 –L– (RT)

DETAIL Y
SPECIAL CUT BASE DITCH
(Not to Scale)

Min. D= 1.5 Ft.
B= 6 Ft.

FROM STA. 310+00 –L– TO STA. 313+00 –L– (LT)

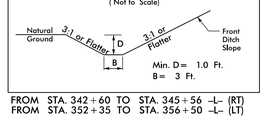
DETAIL Z
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 6 Ft.

FROM STA. 313+00 TO STA. 319+50 –L– (LT)
FROM STA. 329+67 TO STA. 330+40 –L– (LT)
FROM STA. 361+50 TO STA. 372+10 –L– (LT)

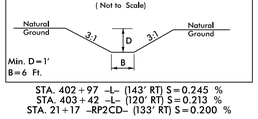
DETAIL AA
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 3 Ft.

FROM STA. 342+60 TO STA. 345+56 –L– (RT)
FROM STA. 352+35 TO STA. 356+50 –L– (LT)

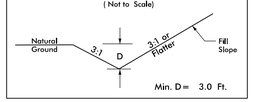
DETAIL BB
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1'
B= 6 Ft.

STA. 402+97 –L– (143' RT) S= 0.245 %
STA. 403+42 –L– (120' RT) S= 0.213 %
STA. 21+17 –RP2CD– (133' RT) S= 0.200 %

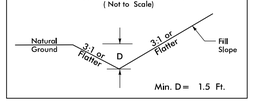
DETAIL CC
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 3.0 Ft.

FROM STA. 10+50 TO STA. 13+50 –DR1– (LT)

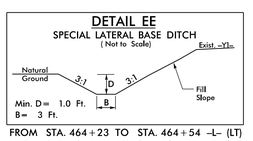
DETAIL DD
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.5 Ft.

FROM STA. 40+50 TO STA. 41+63 –RP2AC– (RT)

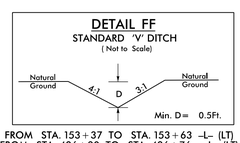
DETAIL EE
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 3 Ft.

FROM STA. 464+23 TO STA. 464+54 –L– (LT)
FROM STA. 464+42 TO STA. 464+59 –L– (RT)
FROM STA. 464+83 TO STA. 465+29 –L– (LT)
FROM STA. 464+90 TO STA. 465+15 –L– (RT)

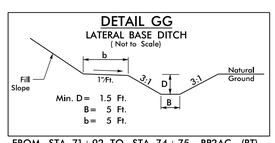
DETAIL FF
STANDARD 'V' DITCH
(Not to Scale)



Min. D= 0.5Ft.

FROM STA. 153+37 TO STA. 153+63 –L– (LT)
FROM STA. 486+30 TO STA. 486+76 –L– (LT)
FROM STA. 21+18 (137') TO STA. 22+52 (117.3') –RP2CD– (RT)

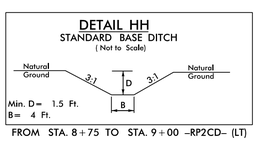
DETAIL GG
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
B= 5 Ft.
b= 5 Ft.

FROM STA. 71+92 TO STA. 74+75 –RP2AC– (RT)
FROM STA. 519+38 TO STA. 520+10 –L– (LT)

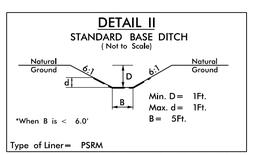
DETAIL HH
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
B= 4 Ft.

FROM STA. 8+75 TO STA. 9+00 –RP2CD– (LT)

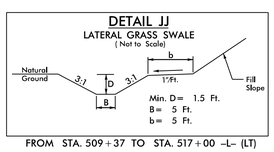
DETAIL II
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1Ft.
Max. d= 1Ft.
B= 5Ft.
*When B is < 6.0'
Type of Liner= PSRM

FROM STA. 512+94 TO STA. 514+35 –L– (RT)

DETAIL JJ
LATERAL GRASS SWALE
(Not to Scale)



Min. D= 1.5 Ft.
B= 5 Ft.
b= 5 Ft.

FROM STA. 509+37 TO STA. 517+00 –L– (LT)

11/2/2018
G:\RAY\9729-02\CADD\R1015\Roadway\Proj\r-1015_Hyd_DRN_details.dgn
amadlin

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2D-2
R/W SHEET NO.	

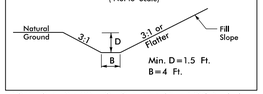
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

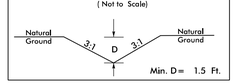
DRAINAGE DITCH DETAILS

DETAIL KK
SPECIAL LATERAL BASE DITCH
(Not to Scale)



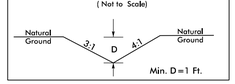
FROM STA. 9+00 TO STA. 11+65 –RP2CD– (LT)
FROM STA. 563+25 TO STA. 565+50 –L– (LT)

DETAIL LL
STANDARD 'V' DITCH
(Not to Scale)



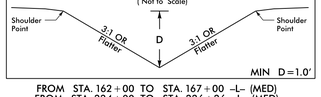
STA. 90+41 –RP2A– (LT)
FROM STA. 12+15 TO STA 12+89 –RP2CD– (RT)
FROM STA. 534+65 TO STA. 535+02 –L– (LT)
FROM STA. 536+53 TO STA. 536+74 –L– (LT)
FROM STA. 536+83 TO STA. 537+43 –L– (LT)

DETAIL MM
STANDARD 'V' DITCH
(Not to Scale)



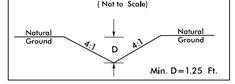
STA. 11+66 to 12+05 –RP2CD– (LT)

DETAIL NN
MEDIAN V DITCH
(Not to Scale)



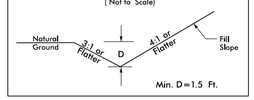
FROM STA. 162+00 TO STA. 167+00 –L– (MED)
FROM STA. 224+00 TO STA. 226+26 –L– (MED)
FROM STA. 434+50 TO STA. 450+50 –L– (MED)
FROM STA. 530+14 TO STA. 536+00 –L– (RT)
FROM STA. 537+00 TO STA. 579+00 –L– (RT)
FROM STA. 555+00 TO STA. 559+50 –L– (MED)
FROM STA. 566+47 TO STA. 575+00 –L– (MED)
FROM STA. 575+00 TO STA. 579+17.51 –L– (MED)

DETAIL OO
STANDARD 'V' DITCH
(Not to Scale)



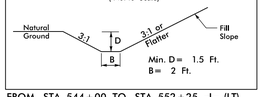
STA. 533+55 –L– (LT) S=6.8 %

DETAIL PP
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



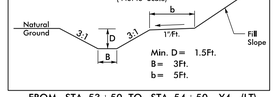
FROM STA. 559+00 TO STA. 562+50 –L– (LT)

DETAIL QQ
SPECIAL LATERAL BASE DITCH
(Not to Scale)



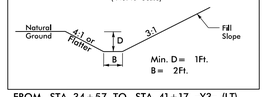
FROM STA. 544+00 TO STA. 552+25 –L– (LT)
FROM STA. 562+50 TO STA. 563+25 –L– (LT)

DETAIL RR
LATERAL BASE DITCH
(Not to Scale)



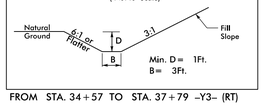
FROM STA. 53+50 TO STA. 54+50 –Y4– (LT)
STA. 11+00 –SERVEXT– S=0.286 %

DETAIL SS
SPECIAL LATERAL BASE DITCH
(Not to Scale)



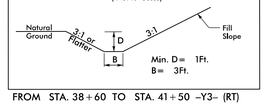
FROM STA. 34+57 TO STA. 41+17 –Y3– (LT)
FROM STA. 543+00 TO STA. 544+00 –L– (LT)

DETAIL TT
SPECIAL LATERAL BASE DITCH
(Not to Scale)



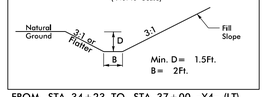
FROM STA. 34+57 TO STA. 37+79 –Y3– (RT)

DETAIL UU
SPECIAL LATERAL BASE DITCH
(Not to Scale)



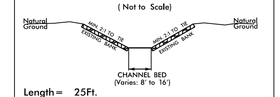
FROM STA. 38+60 TO STA. 41+50 –Y3– (RT)

DETAIL WW
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 34+23 TO STA. 37+00 –Y4– (LT)
FROM STA. 34+47 TO STA. 38+00 –Y4– (RT)
FROM STA. 12+00 TO STA. 15+70 –Y4DR– (LT)
FROM STA. 12+00 TO STA. 15+70 –Y4DR– (LT)

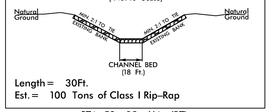
DETAIL XX
PIPE INLET CHANNEL AND BANK STABILIZATION
(Not to Scale)



Length= 25Ft.
Est.= 20 Tons of Class I Rip–Rap

STA. 51+65 –Y4– (LT)

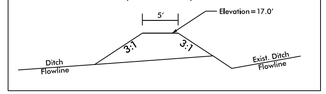
DETAIL YY
PIPE OUTLET CHANNEL
(Not to Scale)



Length= 30Ft.
Est.= 100 Tons of Class I Rip–Rap

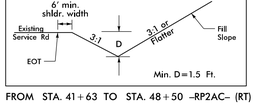
STA. 52+38 –Y4– (RT)

DETAIL ZZ
DITCH BLOCK
(Not to Scale)



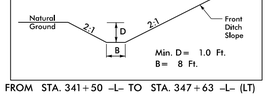
STA. 58+77 –Y4– (LT)

DETAIL AAA
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



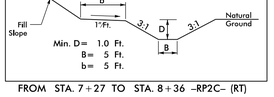
FROM STA. 41+63 TO STA. 48+50 –RP2AC– (RT)

DETAIL CCC
SPECIAL CUT BASE DITCH
(Not to Scale)



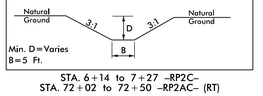
FROM STA. 341+50 –L– TO STA. 347+63 –L– (LT)

DETAIL DDD
LATERAL BASE DITCH
(Not to Scale)



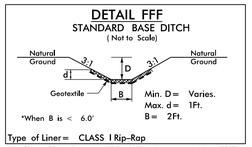
FROM STA. 7+27 TO STA. 8+36 –RP2C– (RT)

DETAIL EEE
STANDARD BASE DITCH
(Not to Scale)



STA. 6+14 to 7+27 –RP2C–
STA. 72+02 to 72+50 –RP2AC– (RT)

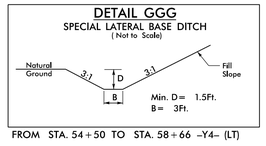
DETAIL FFF
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CLASS I Rip–Rap

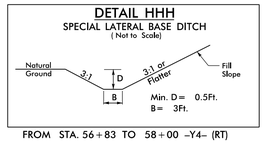
FROM STA. 34+12 TO STA. 34+47 –Y4– (RT)

DETAIL GGG
SPECIAL LATERAL BASE DITCH
(Not to Scale)



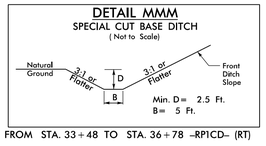
FROM STA. 54+50 TO STA. 58+66 –Y4– (LT)

DETAIL HHH
SPECIAL LATERAL BASE DITCH
(Not to Scale)



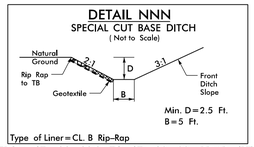
FROM STA. 56+83 TO STA. 58+00 –Y4– (RT)

DETAIL MMM
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM STA. 33+48 TO STA. 36+78 –RP1CD– (RT)

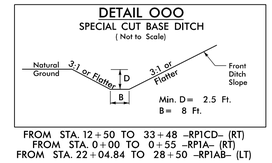
DETAIL NNN
SPECIAL CUT BASE DITCH
(Not to Scale)



Type of Liner=CL. B Rip–Rap

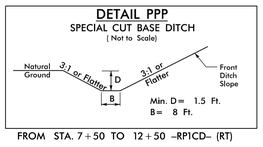
FROM STA. 28+39.21 TO STA. 30+00 –RP1AB– (RT)
FROM STA. 36+78 TO STA. 36+93.06 –RP1CD– (RT)

DETAIL OOO
SPECIAL CUT BASE DITCH
(Not to Scale)



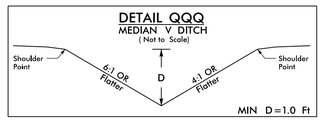
FROM STA. 12+50 TO 33+48 –RP1CD– (RT)
FROM STA. 0+00 TO 0+55 –RP1A– (RT)
FROM STA. 22+04.84 TO 28+50 –RP1AB– (LT)

DETAIL PPP
SPECIAL CUT BASE DITCH
(Not to Scale)



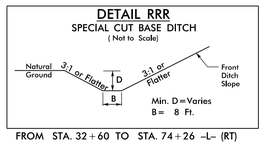
FROM STA. 7+50 TO 12+50 –RP1CD– (RT)

DETAIL QQQ
MEDIAN V DITCH
(Not to Scale)



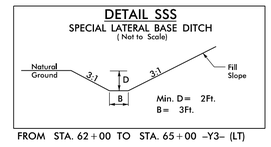
–RP1AB– FROM STA. 20+50 TO STA. 22+70 –RP1AB– (MED)

DETAIL RRR
SPECIAL CUT BASE DITCH
(Not to Scale)



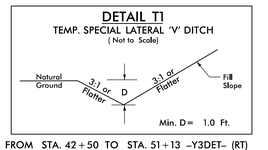
FROM STA. 32+60 TO STA. 74+26 –L– (RT)

DETAIL SSS
SPECIAL LATERAL BASE DITCH
(Not to Scale)



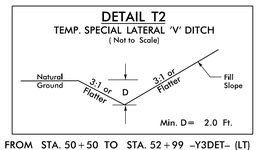
FROM STA. 62+00 TO STA. 65+00 –Y3– (LT)

DETAIL T1
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



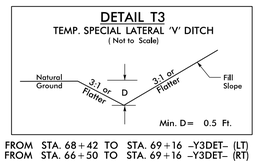
FROM STA. 42+50 TO STA. 51+13 –Y3DET– (RT)
FROM STA. 55+00 TO STA. 59+50 –Y3DET– (RT)
FROM STA. 38+25 TO STA. 40+25 –Y4DET– (LT)
FROM STA. 54+00 TO STA. 55+00 –Y4DET– (LT)

DETAIL T2
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



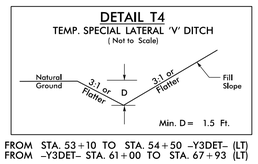
FROM STA. 50+50 TO STA. 52+99 –Y3DET– (LT)
FROM STA. 54+50 TO STA. 61+00 –Y3DET– (LT)
FROM STA. 34+52 TO STA. 38+78 –Y4DET– (RT)

DETAIL T3
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



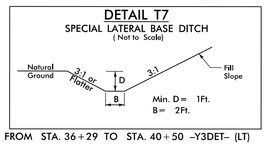
FROM STA. 68+42 TO STA. 69+16 –Y3DET– (LT)
FROM STA. 66+50 TO STA. 69+16 –Y3DET– (RT)

DETAIL T4
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



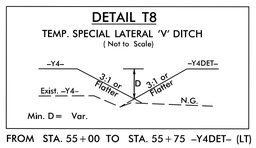
FROM STA. 53+10 TO STA. 54+50 –Y3DET– (LT)
FROM –Y3DET– STA. 61+00 TO STA. 67+93 (LT)

DETAIL T7
SPECIAL LATERAL BASE DITCH
(Not to Scale)



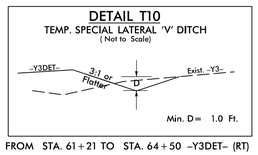
FROM STA. 36+29 TO STA. 40+50 –Y3DET– (LT)

DETAIL T8
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 55+00 TO STA. 55+75 –Y4DET– (LT)

DETAIL T10
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 61+21 TO STA. 64+50 –Y3DET– (RT)

REVISIONS

8/17/99

11/2/2018
G:\RAA\9729-02\CADD\R1015\Roadway\Proj\r-1015_Hyd_DRN_details.dgn
amadlin

PROJECT REFERENCE NO.	SHEET NO.
R-1015	2G-1

GEOTECHNICAL ENGINEER

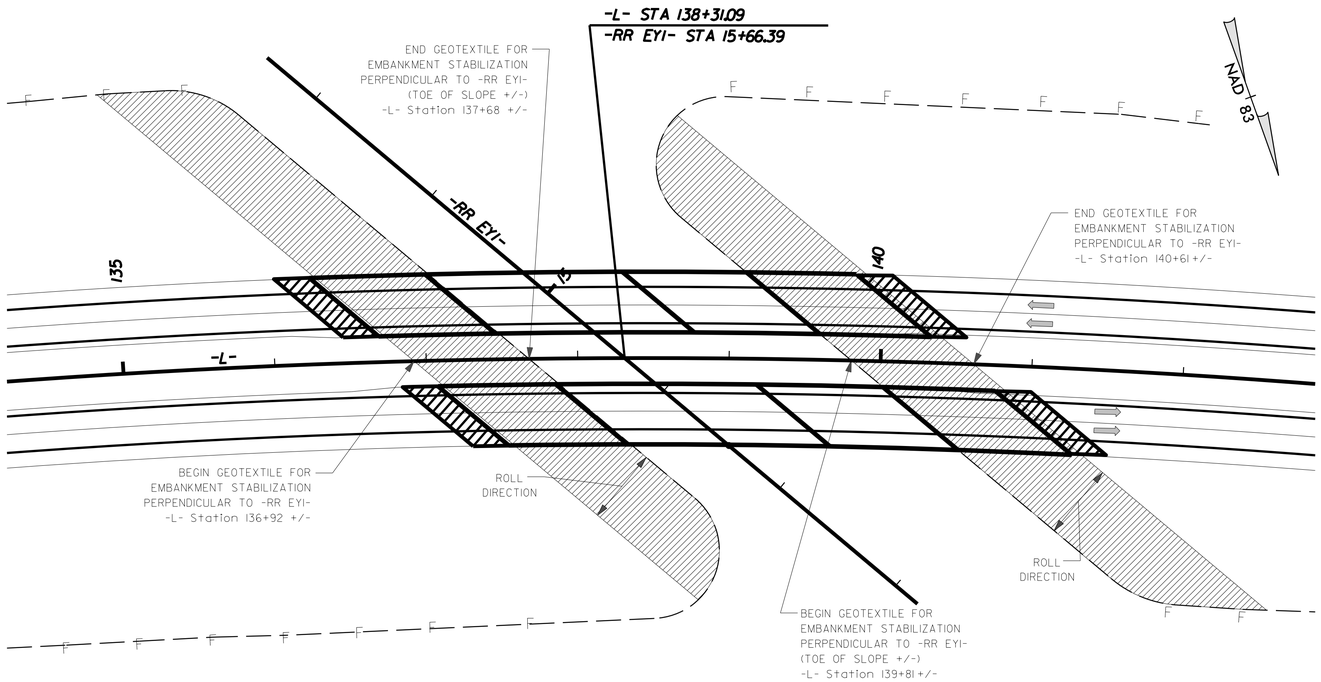
NORTH CAROLINA PROFESSIONAL SEAL 020175 ENGINEER ELIZABETH C. HOWEY

DocuSigned by: Elizabeth C Howey 9/10/2018
F80E690821524F3...
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

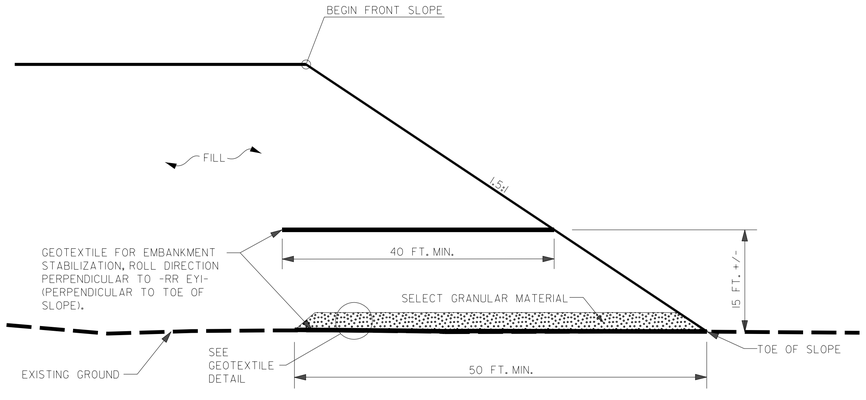


PLAN VIEW FOR LIMITS OF GEOTEXTILE
N.T.S.

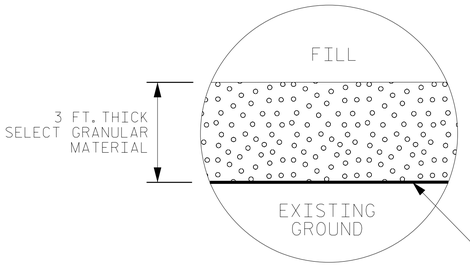
AREA OF GEOTEXTILE FOR EMBANKMENT STABILIZATION MACHINE OR ROLL DIRECTION PERPENDICULAR TO -RR EY1- (PERPENDICULAR TO TOE OF SLOPE)

NOTES

1. DO NOT GRUB, ONLY CLEAR THE AREA WITHIN THE LIMITS OF THE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
2. PLACE GEOTEXTILE FOR EMBANKMENT STABILIZATION PERPENDICULAR TO -RR EY1- (PERPENDICULAR TO TOE OF SLOPE) ON THE EXISTING GROUND AFTER CLEARING.
3. PLACE THE GEOTEXTILE WITHOUT ANY WRINKLES OR CREASES.
4. NO SEAMS OR JOINTS ARE ALLOWED IN THE MACHINE DIRECTION OF GEOTEXTILE.
5. GEOTEXTILE FOR EMBANKMENT STABILIZATION SHEETS MUST HAVE A CONTINUOUS LENGTH OF 50 FEET MINIMUM FOR THE LOWER LAYER AND 40 FEET MINIMUM FOR THE UPPER LAYER.
6. THE TERMS ROLL AND MACHINE DIRECTION ARE USED INTERCHANGEABLY.
7. ALL JOINTS IN THE CROSS MACHINE DIRECTION MUST BE OVERLAPPED A MINMUM OF 18 INCHES.
8. PLACE 3 FT. OF SELECT GRANULAR MATERIAL ON THE LOWER LAYER OF GEOTEXTILE.
9. FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION , SEE GEOTEXTILE FOR EMBANKMENT STABILIZATION SPECIAL PROVISION.
10. FOR SELECT GRANULAR MATERIAL, SEE SECTION 265 OF THE STANDARD SPECIFICATIONS.



TYPICAL PROFILE VIEW



GEOTEXTILE FOR EMBANKMENT STABILIZATION, ROLL DIRECTION PERPENDICULAR TO -RR EY1- (PERPENDICULAR TO TOE OF SLOPE)

GEOTEXTILE DETAIL
N.T.S.

QUANTITIES

GEOTEXTILE FOR EMBANKMENT STABILIZATION	6000 SY#
SELECT GRANULAR MATERIAL	6000 CY

GEOTEXTILE FOR EMBANKMENT STABILIZATION ESTIMATED QUANTITY DOES NOT INCLUDE OVERLAPS OR WASTE.

PREPARED BY: W. D. SHUECRAFT	DATE: 9/2018
REVIEWED BY: E.C. HOWEY	DATE: 9/2018

HDR

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

GEOTEXTILE FOR EMBANKMENT STABILIZATION DETAILS

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PROJECT REFERENCE NO.	SHEET
R-1015	2H-1

GEOENVIRONMENTAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31499 ENGINEER CYRUS F. PARKER

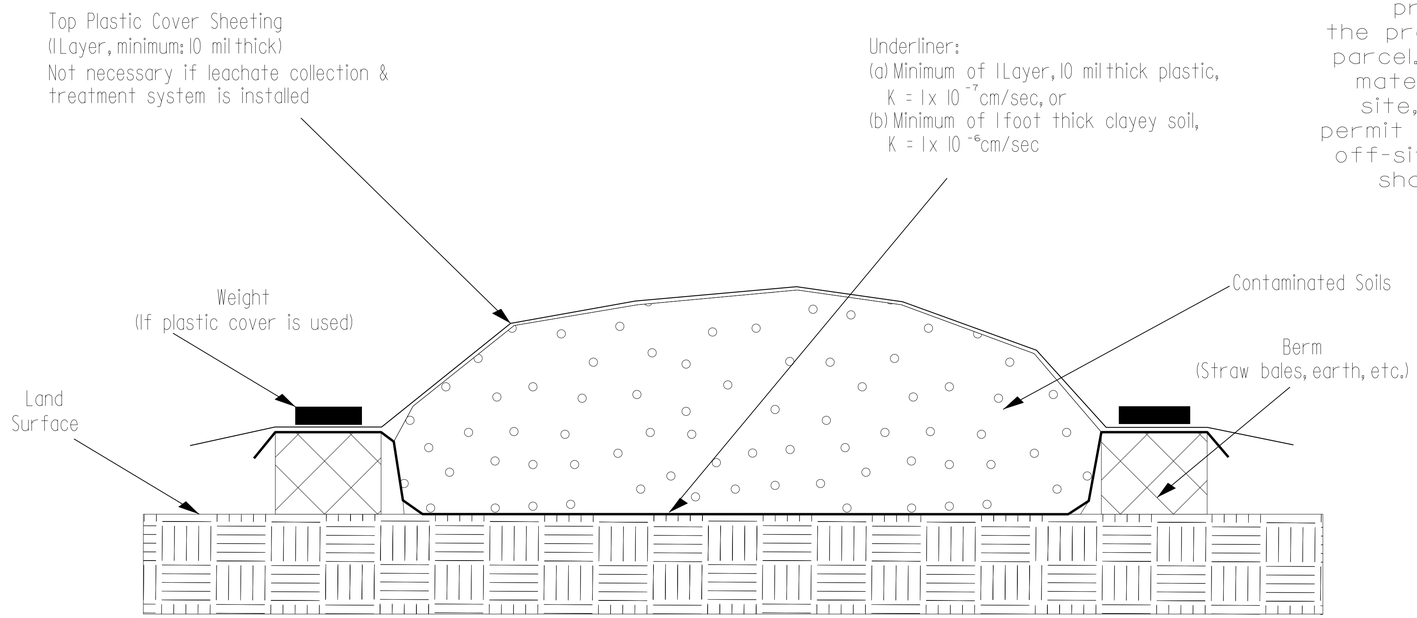
DocuSigned by: Cyrus Parker 2/1/2018
C96492AE5E824DF...
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

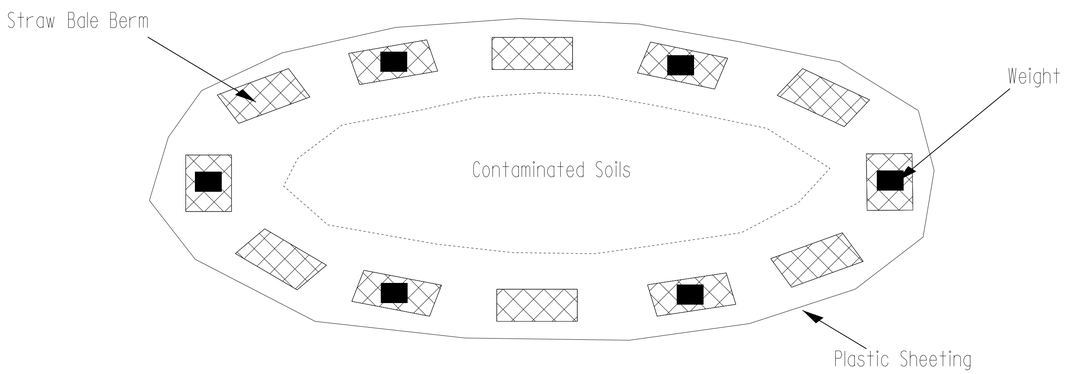
Detail for Temporary Containment of Contaminated Soil

Cross-Section View



NOTE:
The Contractor shall stockpile all contaminated soil excavated from a property in a location within the property boundaries of the source parcel. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDEQ UST Section for off-site temporary storage. Stockpile shall be removed within 45 days.

Map View



PREPARED BY:	DATE:
REVIEWED BY:	DATE:

GEOTECHNICAL ENGINEERING UNIT

☐ EASTERN REGIONAL OFFICE
☐ WESTERN REGIONAL OFFICE
☒ CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STOCKPILE CONTAINMENT DETAIL

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PROJ. REFERENCE NO.	SHEET NO.
R-1015	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4-10,41,42	DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST
2	10-27,30,31,34-39,45,46,48	DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST
3	13	DAVID T. ROWE, et ux JAMES M. STALLINGS, et ux
4	16-18,43,44	WEYERHAEUSER COMPANY
5	18	FRANK A. MARMAROSE, et ux
6	22-24	EDWARD J. CIESZKO (ESTATE)
7	24	LARRY S. PAUL
8	27,28,29	WEYERHAEUSER COMPANY
9	31	LENA EBRON
10	31,32	R. GRAHAM WILLIAMS, et ux
11	31,32	BOLING FAMILY INVESTMENTS, LLC, et al
12	32	CLYDE O BELANGIA, JR, et al
13	32,33,34,35,48	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
14	36	JOHN A. JACKSON
15	36	2-2J, LLC
16	36	DONALD KOONTZ
17	36	WILLIAM L. LUUZADDER
18	36	NEIL BAKER
19	36	DAVID C. MATHER
20	36	NEIL BAKER
21	36,37	ELIIS B. SALTER
22	36,37	NEIL BAKER
23	36,37	JOANN COWAN TADLOCK
24	37	THOMAS AVON GRIFFIN
25	37	ROYCE B DAW
26	37	BILLY ROBERT BRIDGEWATER
27	37	WALTER J KINCAID
28	37	LAURIE RENNIE WYNNE DICKERSON
29	37	WILLIAM D. WYNNE, et ux
30	37	NOT USED
31	37	JEFFREY A. WYNNE
32	37	NOT USED
33	37,38	NOT USED
34	38	RICKY E DICKERSON
35	38	RICKEY E DICKERSON
36	38	LEROY SMITH
37	38	DAVID ARLIN TIVNAN
38	38	UNKNOWN OWNER
39	39	EMMA C. HARTFORD
40	41	ARMISTEAD PROPERTIES, LLC
41	41,42	MARINE FEDERAL CREDIT UNION
42	42	HAVELOCK HWY 70, LLC
43	42	JOEL R. BANKS
44	42	WADE CARY ENTERPRISES, INC
45	42	EL CERRO GRANDE #6, INC
46	42A	BOB HILL ENTERPRISES, INC
47	44	JEAN E. SANBORN
48	44	ROBERT SAMUEL CLARK, et ux
49	45	MALCOLM D CIESZKO
50	45	MARGARET ELLEN JONES
51	45	DANIEL F WALSH, et ux
52	46	DENNIS R LAUGHLIN
53	47	TUCKER CREEK, LLC
54	42	NATIONAL RETAIL PROPERTIES, LP
55	42,42A	FIRST FLIGHT FEDERAL CREDIT UNION
56	42, 42A	4 SISTERS-00, LLC
57	44	LYNN WILSON, et ux
58	44	ELLA FAY STEELE
59	44	ROBERT SAMUEL CLARK, et ux
60	44	MILTON RAY GRIFFIN

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
61	44	FOREST OAKS MEMORIAL GARDENS, INC
62	36,47,48	JOHN TYLER JACKSON
63	38	MAGGIE M. SMITH

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Phone (919) 781-4629 Fax
NC License NO.: F-0105

-L-
PI Sta 33+69.33
Δ = 17° 46' 26.7" (RT)
D = 3° 19' 35.2"
L = 534.33'
T = 269.33'
R = 1,722.44'
SE = 0.08
RO = 320.00'
DS = 60 mph

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
1

NAD 83

35

40

-L- PC Sta. 31+00.00

+50.00 -L-
125.00' LT
EXIST R/W

TAPER TO EXIST

+50.00

SPECIAL CUT 8' BASE DITCH
SEE DETAIL A

+34.33 -L-
125.00' LT

+50.00 -L-
135.00' LT
125.00' LT

850.00' LANE DROP TAPER

SPECIAL CUT 8' BASE DITCH
SEE DETAIL A

BEGIN WW FENCE

404 HW

2 @ 36" RCP-V
BURIED 1.0 FT

REMOVE
SYSTEM

2GI

15" RCP-IV

FS
SEE DETAIL B

401

402

403

408

409

GPS R1015-2

-L-

N 0° 26' 50.1" E

250' RW

260' RW

MATCH LINE STA.44+00 SEE SHEET 5

BEGIN TIP PROJECT R-1015
BEGIN CONSTRUCTION
-L- POC STA 32+80.83

405

407

2 @ 36" RCP-V
BURIED 1.0 FT

40.00'
TYP

+87.66

BEGIN WW FENCE

+34.33 -L-
125.00' RT

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

SPECIAL CUT 8' BASE DITCH
SEE DETAIL RRR

CLASS I RIP RAP
EST. 30 TONS
EST. 60 SY GF

SPECIAL CUT 8' BASE DITCH
SEE DETAIL RRR

PUE

+50.00 -L-
125.00' RT
EXIST R/W

-L- PT Sta. 36+34.33

+27.00 -L-
125' RT
142' RT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
1

SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

SEE RDWY STD DWGS 865.01
FOR CABLE GUIDERAIL INSTALLATION

SEE SHEET 49 FOR PROFILE -L-

11/2/2018
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amadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4629 Fax
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

-L-
PI Sta 58+21.81
△ = 38° 01' 15.2" (LT)
D = 1° 53' 54.5"
L = 2,002.71'
T = 1,039.80'
R = 3,018.00'
SE = 0.06
R0 = 300.00'
DS = 65 mph

NAD 83

MATCH LINE STA: 44+00 SEE SHEET 4

MATCH LINE STA. 58+00 SEE SHEET 6

-L- PC Sta. 47+82.02

+00.00 -L- 125.00' LT 135.00' LT

+82.02 -L- 125.00' LT

+50.00 -L- 125.00' LT 140.00' LT

850' LANE DROP TAPER

300' TAPER

SPECIAL CUT 8' BASE DITCH SEE DETAIL A

SPECIAL CUT 8' BASE DITCH SEE DETAIL RRR

POWER TRANSMISSION EASEMENT

15" RCP-IV

18" RCP-IV

N 0° 26' 50" E

-BY-1

-BY-2

-BY-3

FS SEE DETAIL B

GREU (TL-3)

50.00' TYP

+32.02

+25.00

+35.00

BMI

CL B RIP RAP EST. 3 TONS EST. 10 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

+95.00 -L- 142.00' RT 162.00' RT

+05.00 -L- 142.00' RT 162.00' RT

+82.02 -L- 125.00' LT

+25.00 -L- 142.00' RT 162.00' RT

+35.00 -L- 142.00' RT 162.00' RT

+50.00 -L- 142.00' RT 162.00' RT

+60.00 -L- 142.00' RT 162.00' RT

+75.00 -L- 142.00' RT 162.00' RT

+85.00L- 142.00' RT 162.00' RT

+50.00 -L- 125.00' RT 130.00 RT

+82.00 -L- 142.00' RT 162.00' RT

+72.00 -L- 142.00' RT 162.00' RT

+37.00 -L- 142.00' RT 162.00' RT

+47.00 -L- 142.00' RT 162.00' RT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS
SEE SHEET 50 FOR PROFILE -L-

11/2/2018
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jmcclin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Phone (919) 781-4865 Fax
NC License NO.: F-0105

NAD 83

-L-
PI Sta 58+21.81
Δ = 38° 01' 15.2" (LT)
D = 1° 53' 54.5"
L = 2,002.71'
T = 1,039.80'
R = 3,018.00'
SE = 0.06
RO = 3.30° (3.39')
DS = 65 mph

-RPIB-
PIs Sta 1+27.66
θs = 2° 15' 20.7"
θs = 3° 55' 48.1"
Ls = 234.00'
LT = 127.66'
ST = 106.56'

PI Sta 6+71.71
Δ = 28° 46' 49.2" (LT)
D = 3° 21' 30.6"
L = 856.94'
T = 437.71'
R = 1,706.00'
SE = 0.06
RO = 234.00'
DS = 50 mph

POWER TRANSMISSION EASEMENT
100.00'
POWER TRANSMISSION EASEMENT
200.00'
CARTERET COUNTY
CRAVEN COUNTY

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
1

MATCH LINE STA. 58+00 SEE SHEET 5

MATCH LINE STA.72+00 SEE SHEET 7

MATCH LINE -RPIB- SEE SHEET 7 STA. 7+20

-RPIB- ST Sta. 0+00.00 = -L- POC Sta. 64+74.20

-RPIB- SC Sta. 2+34.00

-L- PT Sta. 67+84.73

G1 - GATED ENCROACHMENT SEE X-9 FOR GRADE 12' PAVED W/2' SHLD

+10.00 -L- 140.00' LT
CL B RIP RAP EST. 5 TONS EST. 14 SY GF

SPECIAL CUT 8' BASE DITCH SEE DETAIL A

+00.00 -RPIB- 100.00' LT

+34.00 -RPIB- 110.00' LT

CHORD

24" RCP-III
15" RCP-IV
2GI-D
FS SEE DETAIL B
REMOVE
REMOVE SYSTEM
-BY-4
-BY-5
-RPIB-
-L-
N 37° 34' 25.1" W
300' TAPER
10' PS
10'R
4' PS
12' PS
36' RW
130' RW
140' RW
18' CONC W/FES
3.5' BST
24.5' BST
4' BST
24' BST
US 70
FO
EORI
FIBER HOOK UP
PUE
50.00' TYP
110' MBCK
WLB

+58.00' -L- 141.00' RT 162.00' RT
+68.00 -L- 142.00' RT 162.00' RT
+74.00 -L- 142.00' RT 162.00' RT
+84.00 -L- 142.00' RT 162.00' RT
+91.00 -L- 142.00' RT 162.00' RT
+00.00 -L- 142.00' RT 162.00' RT
SPECIAL CUT 8' BASE DITCH SEE DETAIL RRR
+07.00 -L- 142.00' RT 162.00' RT
+17.00 -L- 142.00' RT 162.00' RT
+84.73 -L- 130.00' RT
+25.00 -L- 142.00' RT 162.00' RT
BM2
+35.00 -L- 142.00' RT 162.00' RT
+56.00 -L- 142.00' RT
+34.73
+81.03 -L- 130.00' RT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
1

SEE SHEET 5I FOR PROFILE -L-
SEE SHEET 7I FOR PROFILE -RPIB-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

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amoulton
11/2/2018

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-1015	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 015869 — R. RHODES

HYDRAULICS ENGINEER — SEAL 032581 — A. ANASTASIADIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

KIMLEY-HORN AND ASSOCIATES, INC.
NC FIRM LICENSE: C-0621
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NORTH CAROLINA 27601
PHONE: 919-677-2000
NC FIRM LICENSE: P-0339

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

-RPIB-
PI Sta 6+71.71
Δ = 88° 46' 49.2" (LT)
D = 3° 21' 30.6"
L = 856.34'
T = 437.71'
R = 1706.00'
SE = 0.06'
RO = 234.00'
DS = 50 mph

Pis Sta 11+68.98
Θs = 3° 55' 45.9"
Ls = 234.00'
LT = 156.04'
ST = 78.03'

Pis Sta 14+76.99
Θs = 4° 25' 31.0"
Ls = 228.00'
LT = 152.05'
ST = 76.04'

PI Sta 19+46.74
Δ = 29° 52' 36.5" (RT)
D = 3° 52' 54.6"
L = 769.66'
T = 393.79'
R = 1,476.00'
SE = 0.06'
RO = 228.00'
DS = 50 mph

Pis Sta 23+98.64
Θs = 4° 25' 31.0"
Ls = 228.00'
LT = 152.05'
ST = 76.04'

-L-
Pis Sta 78+66.36
Θs = 3° 42' 07.2"
Ls = 390.00'
LT = 260.06'
ST = 130.05'

PI Sta 83+47.37
Δ = 14° 58' 57.1" (LT)
D = 7° 53' 54.5"
L = 1,842.67'
R = 726.00'
SE = 0.07'
RO = 350.00'
DS = 70 mph

Pis Sta 89+69.02
Θs = 3° 42' 07.2"
Ls = 390.00'
LT = 260.06'
ST = 130.05'

-RPIAB-
PI Sta 1+28.02
Δ = 148° 34' 49.8" (LT)
D = 28° 25' 38.6"
Ls = 195.00'
LT = 1,280.02'
ST = 703.92'

Pis Sta 9+18.76
Δ = 148° 32' 49.5" (RT)
D = 29° 05' 02.9"
L = 544.91'
T = 723.76'
R = 197.00'
SE = 0.075'
RO = 135.00'
DS = 25 mph

Pis Sta 7+75.74
Θs = 28° 21' 25.4"
Ls = 195.00'
LT = 1,307'
ST = 665.36'

-RPICD-
Pis Sta 4+74.02
Θs = 1° 50' 01.2"
Ls = 230.00'
LT = 1,540.01'
ST = 771.01'

PI Sta 9+36.75
Δ = 12° 16' 05.4" (LT)
D = 7° 35' 15.3"
L = 768.56'
T = 385.74'
R = 760.00'
SE = 0.03'
RO = 231.00' (108')
DS = 50 mph

Pis Sta 13+96.57
Θs = 1° 50' 01.2"
Ls = 230.00'
LT = 1,540.01'
ST = 771.01'

SEE SHEETS 51 AND 52 FOR PROFILE -L-
SEE SHEET 71 AND 72 FOR PROFILE -RPIB-
SEE SHEET 72 FOR PROFILE -RPIAB-
SEE SHEET 76 FOR PROFILE -RPICD-
SEE SHEET 77 FOR PROFILE -LPIB-
SEE SHEET 20-7 SKETCH I FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 20-1THRU 20-2 FOR DRAINAGE DITCH DETAILS

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:	US 70 (HAVELOCK BYPASS) FROM SOUTH OF CARTERET, CRAVEN COUNTY LINE TO SOUTH OF SR 1176 (CAROLINA PINES BLVD)
TIP NO.: R-1015	COUNTY: CRAVEN
DESIGNED BY: DGM	
CHECKED BY: TRR	DATE: 6/18/2018

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Phone (919) 781-4627 Fax
NC License NO.: F-0105

-L-
PIs Sta 99+69.02
Θs = 3° 42' 07.2"
Ls = 390.00'
LT = 260.06'
ST = 130.05'

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

BM5

NAD + 83

100 105 110

-L- ST Sta. 102+28.97

+28.97 -L-
125.00' LT

CHORD

MATCH LINE STA.100+00 SEE SHEET 7

MATCH LINE STA.114+00 SEE SHEET 9

125' RW

GREU-TL3

36" RCP-IV EQUALIZER

803 802 801 804

BL-2 BL-3

FS
SEE DETAIL B

-L- N 79° 57' 36.8" W

50.00' TYP

+88.97

20.00' TYP

+26.56

-RP1A-

+86.56 -RP1A-
75.00' RT

+86.55 -RP1A-
75.00' RT

1350.00' ACCELERATION LANE

-RP1A- CS Sta. 7+86.56

-RP1A- ST Sta. 9+86.56 =
-L- POT Sta. 106+83.84

CL B RIP RAP
EST. 1 TONS
EST. 5 SY GFF

15" CAAP
W/ BROWS

4109 4193

36" RCP-IV EQUALIZER

75' RW

MATCH LINE -RP1A-
STA. 4+00 SEE SHEET 41

-RP1A-

PI Sta 6+08.39
△ = 102° 27' 39.0" (RT)
D = 17° 28' 05.6"
L = 586.56'
T = 408.39'
R = 328.00'
SE = 0.08
RO = 160.00'
DS = 35 mph

PIs Sta 8+53.82
Θs = 17° 28' 05.6"
Ls = 200.00'
LT = 133.99'
ST = 67.26'

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

SEE SHEET 52 FOR PROFILE -L-
SEE SHEET 71 FOR PROFILE -RP1A-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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jmcallin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

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moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4627 Fax
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)

(1)

-L-
PIs Sta 129+36.09
Θs = 1° 28' 37.4"
Ls = 296.00'
LT = 197.34'
ST = 98.67'

NAD 83

MATCH LINE STA.114+00 SEE SHEET 8

MATCH LINE STA.128+00 SEE SHEET 10

POWER TRANSMISSION EASEMENT

CP&L R/W

115 120 125

+74 -L- 125' LT 228' LT

+26 -L- 125' LT 228' LT

PUE

G10 – GATED ENCROACHMENT SEE X-45 FOR GRADE 12' PAVED W/2' SHLD

END WW FENCE

BEGIN WW FENCE

+66.00 -L- 125.00' LT

+38.75 -L- 200.00' LT

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

BEGIN SBG +58.00

15" CAAP W/ELBOWS

10'R

8:1

CAT-1

PROP SBG

TB 2GI

15" RCP-IV

36" RCP-IV EQUALIZER

18" RCP-IV

2GI-D

FS SEE DETAIL B

2GI

BL-4

BL-5

BL-6

50.00' TYP

125' R/W

400' R/W

-L- N 79° 57' 36.8" W

8:1 GREU (TL-3)

BEGIN SBG +55.00

18" CAAP W/ELBOWS

1350.00' ACCELERATION LANE

300.00' TAPER

+67.52 -L- 125.00' RT

+33.84

9.67'

-L- TS Sta. 127+38.75

+38.75 -L- 200.00' RT

BM6

902 901 910 914 913 908 907 904 903 909 912 911 905 920 921 906 915

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)

(1)

SEE SHEETS 53 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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mmollin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4627 Fax
NC License NO. F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

-L-
PIs Sta 129+36.09
Θs = 1° 28' 37.4"
Ls = 296.00'
LT = 197.34'
ST = 98.67'

PI Sta 137+14.92
Δ = 13° 30' 48.2" (RT)
D = 0° 59' 52.8"
L = 1,354.03'
T = 680.17'
R = 5,741.00'
SE = 0.04
RO = 200.00'
DS = 70 mph

-RR EY1-
POT Sta. 10+00.00

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
(2)

NAD 83

MATCH LINE STA. 128+00 SEE SHEET 9

MATCH LINE STA. 142+00 SEE SHEET 11

-BY1-1

EXIST RR R/W

130

135

140

N 30° 22' 18.5" W

EXIST RR R/W 200.00' LT

+34.75 -L- 200.00' LT

CHORD

BL-7

BL-8 -BY1-

ATLANTIC & EAST CAROLINA RR

200' R/W

BM7

-L- STA 138+31.09
-RR EY1- STA 15+66.39
Δ = 46° 09 49.6"

STANDARD 12' BASE DITCH W/CLASS I RIP RAP SEE DETAIL E
S=0.001 FT/FT
DDE= 400 CY
CLASS I RR=560 TONS

BEGIN WW FENCE TYPE B-77

END SBG +35.00

50.00' TYP

+34.75

36" RCP-IV EQUALIZER

END WW FENCE

TYPE B-77

FS SEE DETAIL B

GREU (TL-3) 8:1

2GI

15" RCP-IV

TB 2GI

BEGIN SBG +72.36

END SBG +72.49

PROP SBG

18" CAAP W/ELBOWS

15" CAAP W/ELBOWS

END SBG +27.00

END WW FENCE

BEGIN WW FENCE TYPE B-77

BEGIN SBG +49.59

-BY1-2

FILL EXISTING DITCH TO NATURAL GROUND

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

-L- SC Sta. 130+34.75

+34.75 -L- 200.00' RT

EXIST RR R/W 200.00' RT

POWER TRANSMISSION EASEMENT

SEE SHEET 53 FOR PROFILE -L-
SEE SHEET 2B-7 SKETCH 2 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
(1)

11/2/2018
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smadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	11
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Fax
NC License NO.: F-0105

-L-
PI Sta 137+14.92
Δ = 13° 30' 48.2" (RT)
D = 0° 59' 52.8"
L = 1,354.03'
T = 680.17'
R = 5,741.00'
SE = 0.04
RO = 200.00'
DS = 70 mph

PIs Sta 144+87.46
Θs = 1° 28' 37.4"
Ls = 296.00'
LT = 197.34'
ST = 98.67'

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

MATCH LINE STA.142 + 00 SEE SHEET 10

MATCH LINE STA.156 + 00 SEE SHEET 12

145 150 155

WOODS

POWER TRANSMISSION EASEMENT 100.00'

+88.88 -L- 200.00' LT

+84.78 -L- 150.00' LT

+31.00 -L- 125.00' LT

CHORD

36" RCP-IV EQUALIZER

50.00' TYP

+38.78

BEGIN SBG +89.00

1120 1114 1110 1109 1116 1118

TB 2GI

CL B RIP RAP EST. 1 TON EST. 5 SY GF

15" CAAP W/ELBOWS

END SBG +00.00 GREU (TL-3) 8:1

HW

10'R

15" RCP-IV

G3A - GATED ENCROACHMENT SEE X-76 FOR GRADE 12' PAVED W/2' SHLD

BEGIN WW FENCE

+10 -L- 125' LT 160' LT

MAINTAIN EXIST. CHANNEL

+40 -L- 125' LT 160' LT

END WW FENCE

GREU (TL-3) 8:1

1103 1104 1108 1112 1123

2GI SEE DETAIL B

FS

N 63° 29' 33.7" W

BL-22

BL-23 2GI

18" RCP-IV

36" RCP-IV

1101 1102 1115 1122 1107 1106 1105 1117

PROP SBG

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CAT-1

CL I RIP RAP EST. 15 TONS EST. 30 SY GF

TIE PROP. DITCH TO EXISTING DITCH

LATERAL 'V' DITCH SEE DETAIL F DDE = 346 CY

+31 -L- 135' LT

+50 -L- 135' LT

+50 -L- 125' LT

+95 -L- 125' RT

+15 -L- 170' RT

+50 -L- 125' RT

+56 -L- 155' RT

+40 -L- 170' RT

PDE

1119

BM8 NCDOT GPS RI0I5-6

G3B - GATED ENCROACHMENT SEE X-90 FOR GRADE 12' PAVED W/2' SHLD

EXIST RR R/W 200.00' LT

+88.78 -L- 200.00' RT

+84.78 -L- 150.00' RT

-L- CS Sta. 143+88.78

-L- ST Sta. 146+84.78

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

POWER TRANSMISSION EASEMENT 100.00'

SEE SHEETS 54 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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dmedlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4628 Fax
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

160

165

MATCH LINE STA.156+00 SEE SHEET 11

MATCH LINE STA. 170+00 SEE SHEET 13

BL-24 BL-25 BL-26

N 63° 29' 33.7" W

500.00' MEDIAN TAPER

+00.00

WOODS

WLB

-L-

2GI

TB 2GI

TYPE B-77

TDE

PROP SBG

BEGIN SBG +71.00 CAT-1 8:1

END SBG +31.28

BEGIN SBG +20.00

GREU (TL-3) 8:1

MEDIAN 'V' DITCH SEE DETAIL NN

LATERAL 'V' DITCH SEE DETAIL H DDE = 15 CY

CLASS II RIP RAP PDE

+85 -L- 125' LT 135' LT

+00 -L- 135' LT

+00.00 -L- 125.00' RT

+40 -L- 125' RT

+60 -L- 135' RT

+00.00 -L- 125.00' RT

1203	36" RCP-IV EQUALIZER	
1204	15" CAAP W/ELBOWS	
1205	CL B RIP RAP EST. 2 TONS EST. 7 SY GF	
1206	15" CAAP W/ELBOWS	
1207	CL B RIP RAP EST. 1 TON EST. 5 SY GF	
1208	18" CAAP W/ELBOWS	
1209	CL B RIP RAP EST. 3 TONS EST. 10 SY GF	
1210	18" RCP-IV	
1211	CL B RIP RAP EST. 2 TONS EST. 7 SY GF	
1212	15" RCP-IV	
1213	CL B RIP RAP EST. 1 TON EST. 5 SY GF	
1214	36" RCP-IV EQUALIZER	
1215	15" CAAP W/ELBOWS	
1216	36" RCP-IV EQUALIZER	
1218	15" CAAP W/ELBOWS	
1219	CL B RIP RAP EST. 2 TONS EST. 7 SY GF	
1220	15" CAAP W/ELBOWS	
1221	CL B RIP RAP EST. 1 TON EST. 5 SY GF	
1225	TYPE B-77	
1226	TYPE B-77	

POWERLINE EASEMENT

SEE SHEET 54 FOR PROFILE -L-
SEE SHEET 2B-7 SKETCH 3 FOR PROPOSED BRIDGE SKETCH
SEE SHEET 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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amadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4627 Fax
NC License NO.: F-0105

MATCH LINE STA.170+00 SEE SHEET 12

MATCH LINE STA.184+00 SEE SHEET 14

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

DAVID T. ROWE, et ux
JAMES M. STALLINGS, et ux
DB 1382 - PG 165
3

NAD 83

170 175 180

+00.00 -L- 125.00' LT

+55 -L- 125' RT

+00.00 -L- 125.00' RT

BL-27

END WW FENCE

BL-28

BL-29

-L- N 63° 29' 33.7" W

TDE

BM9

TIE PROP. DITCH TO NATURAL GROUND

EAST PRONG OF SLOCUM CREEK

WOODS

JS

BZ 1

BZ 2

RW

250'

10'

24'

6'

025

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

DAVID T. ROWE, et ux
JAMES M. STALLINGS, et ux
DB 1382 - PG 165
3

SEE SHEETS 55 FOR PROFILE -L-
SEE SHEETS 2B-7 SKETCH 3 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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mmadin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER J. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Fax
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

185 190 195

MATCH LINE STA.184+00 SEE SHEET 13

MATCH LINE STA.198+00 SEE SHEET 15

BMI0

+40.00 -L- 125.00' LT

+00.00 -L- 125.00' LT

+70 -L- PROP R/W 155' LT

+25 -L- PROP R/W 155' LT

TDE

CLASS II RIP RAP

CL B RIP RAP EST. 2 TONS EST. 7 SY GF (1404)

CL B RIP RAP EST. 1 TON EST. 5 SY GF (1414)

CL B RIP RAP EST. 1 TON EST. 5 SY GF (1428)

BEGIN SBG +02.72

TYPE B-77

18" RCP-IV

18" CAAP W/ELBOWS

PROP SBG

WOODS

TB 2GI

15" RCP-IV

36" RCP-IV EQUALIZER

15" CAAP W/ELBOWS

48" RCP-IV

24" RCP-IV

BEGIN WW FENCE

GREU (TL-3) 8:1

N 63° 29' 33.7" W -L- BL-31

BL-32

FS SEE DETAIL B

CL B RIP RAP EST. 3 TONS EST. 11 SY GF (1421)

CL B RIP RAP EST. 1 TON EST. 5 SY GF (1411)

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL I RIP RAP EST. 26 TONS EST. 50 SY GF

+00.00

500.00' MEDIAN TAPER

+40.00 -L- 125.00' RT

+00.00 -L- 125.00' RT

+32 -L- PROP R/W 150' RT

+85 -L- PROP R/W 150' RT

SEE SHEET 55 FOR PROFILE -L-
SEE SHEET 2B-7 SKETCH 3 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
07:56:37
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dmadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4627 Fax
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

200 205 210

MATCH LINE STA. 198+00 SEE SHEET 14

MATCH LINE STA. 212+00 SEE SHEET 16

CL B RIP RAP EST. 1 TON EST. 5 SY GF (1502)
15" CAAP W/ELBOWS (1501)
TB 2GI
9.67' FS
24' 025
CL B RIP RAP EST. 1 TON EST. 5 SY GF (1522)
36" RCP-IV EQUALIZER (1515)
15" CAAP W/ELBOWS (1521)
TB 2GI
PROP SBG
CL B RIP RAP EST. 1 TON EST. 5 SY GF (1510)
15" CAAP W/ELBOWS (1509)
TB 2GI
WOODS
+00.00 -L- 150.00' LT
CL B RIP RAP EST. 1 TON EST. 5 SY GF (1526)
15" CAAP W/ELBOWS (1525)
TB 2GI
CL B RIP RAP EST. 1 TON EST. 5 SY GF (1512)
15" CAAP W/ELBOWS (1511)
TB 2GI
9.67' FS
24' 025
FS SEE DETAIL B
-L- N 63° 29' 33.7" W
BL-33
BL-34
4' FS
24' 025
15" RCP-IV (1503)
2GI
TB 2GI (1504)
15" CAAP W/ELBOWS
WOODS
CL B RIP RAP EST. 1 TON EST. 5 SY GF (1505)
TB 2GI (1519)
15" CAAP W/ELBOWS
CL B RIP RAP EST. 1 TON EST. 5 SY GF (1520)
PROP SBG
15" RCP-IV (1506)
2GI
TB 2GI (1507)
15" CAAP W/ELBOWS (1508)
WOODS
CL B RIP RAP EST. 1 TON EST. 5 SY GF
36" RCP-IV EQUALIZER (1517)
+00.00 -L- 150.00' RT
TB 2GI (1530)
15" CAAP W/ELBOWS (1524)
CL B RIP RAP EST. 1 TON EST. 5 SY GF
TB 2GI (1513)
15" CAAP W/ELBOWS (1514)
CL B RIP RAP EST. 1 TON EST. 5 SY GF
BMII

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE SHEETS 56 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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dmedlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	16
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 PHONE (919) 781-4865 Fax
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

215

220

225

WEYERHAEUSER COMPANY
DB 1048 - PG 1014
4

MATCH LINE STA.212+00 SEE SHEET 15

MATCH LINE STA. 226+00 SEE SHEET 17

+30 -L- PROP R/W 205' LT

TIE PROP. DITCH TO EXIST. DITCH

LATERAL 'V' DITCH SEE DETAIL H DDE = 144.1 CY

+50 -L- 215' LT

+50.00 -L- 200.00' LT

+65 -L- PROP R/W 215' LT

CL B RIP RAP EST. 1 TON EST. 5 SY GF (1621)

CL B RIP RAP EST. 1 TON EST. 5 SY GF (1608)

CL B RIP RAP EST. 1 TON EST. 5 SY GF (1655)

15" CAAP W/ELBOWS

36" RCP-IV EQUALIZER

300.00' TAPER

650.00' ACCELERATION LANE

25.00'

TB 2GI (1601) (1620) (1610) (1607) (1651)

PROP SBG

15" RCP-IV

WOODS

FS SEE DETAIL B (1602) (1609) (1605)

2GI

-L- N 63° 29' 33.7" W

BL-35

BL-36

8:1 GREU (TL-3)

MEDIAN 'V' DITCH SEE DETAIL NN

R/W

(1603) (1618) (1612) (1606) (1650)

(1604) (1619) (1614) (1616) (1613) (1656)

CL B RIP RAP EST. 1 TON EST. 5 SY GF

TOE PROTECTION CLASS B RIP RAP EST = 155 TONS GT EST = 345 SY SEE DETAIL J

N 61° 11' 33.7" W

-L- POT Sta. 225+06.00 =
-Y3RPC- POT Sta. 0+00.00 (47' RT.)
△ = 2° 18' 00"

+50.00 -L- 200.00' RT

SEE SHEET 56 FOR PROFILE -L-

SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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smadlin

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-1015	17
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA — SEAL 015849 — 10/18/2018 — R. RHODES

HYDRAULICS ENGINEER — NORTH CAROLINA — SEAL 032581 — 10/18/2018 — ANDREW E. ANDERSON

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KCI TECHNOLOGIES, INC.
NORTH CARYLINE PLAZA
10130 PERIMETER PKWY, SUITE 400
CHARLOTTE, NORTH CAROLINA 28216
TEL: 704.731.7500 FAX: 704.731.7550

-L- PI Sta 2+36+02.35 Bk = 2°30'53.3" Lt = 360.00' LT = 240.02' ST = 120.02'
PI Sta 2+56+33.26 Δ = 89°58'05.0" (RT) D = 1°03'49.6" L = 3,574.52' T = 1,901.94' R = 4,80.00' SE = 0.050 RD = 250.00' DS = 70 mph

-Y3RPA- PI Sta 7+77.30 Bk = 2°54'40.9" Ls = 200.00' LT = 133.35' ST = 66.68'
PI Sta 1+32.03 Bk = 3°50'34.8" Ls = 198.00' LT = 132.03' ST = 66.03'
PI Sta 5+48.74 Δ = 26°44'04.5" (LT) D = 3°55'54.6" L = 696.57' T = 352.74' R = 1,476.00' SE = 0.060 RD = 150.00' DS = 50 mph

-Y3RPB- PI Sta 9+52.74 Bk = 3°50'34.8" Ls = 198.00' LT = 132.03' ST = 66.03'
PI Sta 12+45.06 Bk = 11°38'01.2" Ls = 240.00' LT = 160.35' ST = 80.32'
PI Sta 16+00.30 Δ = 50°00'00.1" (RT) D = 9°41'41.0" L = 545.74' T = 275.59' R = 591.50' SE = 0.075 RD = 181.50' DS = 40 mph

-Y3RPC- PI Sta 5+80.57 Bk = 5°02'38.2" Ls = 231.00' LT = 154.06' ST = 77.06'
PI Sta 10+23.05 Δ = 37°08'12.4" (RT) D = 11°22'01.4" L = 710.59' T = 365.54' R = 1,312.00' SE = 0.01' RD = 175.00' DS = 50 mph

-Y3RPD- PI Sta 12+33.61 Bk = 3°50'34.8" Ls = 198.00' LT = 132.03' ST = 66.03'
PI Sta 19+35.51 Bk = 8°54'59" Ls = 264.00' LT = 176.22' ST = 88.20'
PI Sta 21+80.52 Δ = 21°01'02.7" (RT) D = 6°43'01.0" L = 312.90' T = 158.23' R = 853.00' SE = 0.080 RD = 200.00' DS = 50 mph

NAD 1983

-RR EY2- PC Sta. 14+09.26

RR -EY2- STA: 22+70.14 -L- STA 227+57.02 Δ = 91°15'40.9"

-RPPC- 13+82.23 RR -EY2- STA 23+27.37 Δ = 94°23'25.0"

RR -EY2- POT Sta. 25+58.78

RR -EY2- POT Sta. 26+40.42

-L- POT Sta. 229+00.00 = -Y3RPB- ST Sta. 0+00.00 (4" LT)

-L- POT Sta. 229+00.00 = -Y3RPB- ST Sta. 0+00.00 (4" LT)

-L- PC Sta. 236+02.35

-L- PT Sta. 256+33.26

-L- SC Sta. 237+22.32

-L- TS Sta. 233+62.32

-Y3RPA- PC Sta. 1+77.30

-Y3RPA- PT Sta. 7+64.50

-Y3RPB- SC Sta. 13+24.71

-Y3RPB- PT Sta. 18+40.46

-Y3RPB- SRS Sta. 10+84.71

-Y3RPB- CS Sta. 8+86.71

-Y3RPB- ST Sta. 21+05.52

-Y3RPC- PC Sta. 5+80.57

-Y3RPC- SC Sta. 6+57.51

-Y3RPC- PT Sta. 13+70.50

-Y3RPC- TS Sta. 15+58.51

-Y3RPC- POT Sta. 17+33.96 -Y3RPD- POT Sta. 25+55.77 -Y3- POT Sta. 58+26.76

-Y3RPD- PC Sta. 19+35.51

-Y3RPD- PT Sta. 23+36.13

-Y3RPD- SC Sta. 20+23.29

-Y3RPD- TS Sta. 17+59.29

-Y3RPD- ST Sta. 21+05.52

-Y3- POT Sta. 50+32.96 = -L- POT Sta. 244+55.76 Δ = 66°20'57.5"

-Y3- PC Sta. 45+00.00

-Y3- PT Sta. 61+00.00

-Y3RPA- POT Sta. 17+64.50 -Y3RPB- POT Sta. 20+40.28 -Y3- POT Sta. 46+42.38

N 36°16'46.8" W

N 6°29'33" W

N 63°29'33" E

N 25°30'43" W

S 64°09'17" E

S 34°56'0" E

N 61°11'43" W

N 61°11'43" W

MATCH LINE STA. 226+00 SEE SHEET 16

MATCH LINE STA. 254+00 SEE SHEET 18

MATCH LINE -Y3- STA. 45+00 SEE SHEET 43

MATCH LINE -Y3- STA. 61+00 SEE SHEET 44

MATCH LINE -Y3RPD- STA. 8+50 SEE SHEET 18

WEYERHAEUSER COMPANY DB 1048 - PG 104 (4)

DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST

SR 1756 LAKE RD.

BY-PASS

N/A 5700 N/A 15000 N/A 18800 N/A 3500 N/A 8100 N/A 22900 6550 9500 6550 17400

2010 AADT 9500 MPT

SEE SHEETS 57 FOR PROFILE -L-
SEE SHEET 78 FOR PROFILE -Y3-
SEE SHEETS 79 AND 80 FOR PROFILE -Y3RPA-
SEE SHEETS 80 AND 81 FOR PROFILE -Y3RPB-
SEE SHEETS 81 FOR PROFILE -Y3RPC-
SEE SHEET 82 FOR PROFILE -Y3RPD-
SEE SHEET 28-8 BRIDGE SKETCHES 4 & 5 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 20-1THRU 20-2 FOR DRAINAGE DITCH DETAILS

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:	US 70 (HAVELOCK BYPASS) FROM SOUTH OF CARTERET/CRAVEN COUNTY LINE TO SOUTH OF SR 1178 (CAROLINA PINES BLVD)
TIP NO.: R-1015	COUNTY: CRAVEN
DESIGNED BY:	DGM
CHECKED BY: TBR	DATE: 6/18/2018

Q:\RAL\NTP\R-1015\Roadway\PLANS\R-1015_rdy_sht17.dgn

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	18
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brian E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4627 Fax
NC License NO.: F-0105

-L-
PIs Sta 236+02.35 PI Sta 256+33.26
Θs = 2° 30' 53.3" Δ = 49° 58' 05.0" (RT)
Ls = 360.00' D = 1° 23' 49.6"
LT = 240.02' L = 3,576.51'
ST = 120.02' T = 1,910.94'
R = 4,101.00'
SE = 0.050
R0 = 250.00'
DS = 70 mph

-Y3RPA-
PIs Sta 0+66.67 PI Sta 6+37.36 PIs Sta 4+97.39
Θs = 1° 22' 52.6" Δ = 4° 16' 02.1" (RT) Θs = 2° 54' 40.9"
Ls = 200.00' D = 2° 54' 40.9" Ls = 200.00'
LT = 133.34' L = 146.57' LT = 133.35'
ST = 66.67' T = 73.32' ST = 66.68'
R = 1,968.00'
SE = 0.060
R0 = 125.00'
DS = 50 mph

WEYERHAEUSER COMPANY
DB 1048 - PG 1014
4

NAD 83

255 5 260 265

-Y3RPA- CS Sta. 7+10.61
-Y3RPA- SC Sta. 5+64.04
-Y3RPA- TS Sta. 3+64.04
-Y3RPA- ST Sta. 2+00.00
-L- POT ST Sta. 262+50.30 = -Y3RPA- TS Sta. 0+00.00 (47' LT)

MATCH LINE -Y3RPA- STA. 8+50 SEE SHEET 17

MATCH LINE STA. 254+00 SEE SHEET 17

MATCH LINE STA. 268+00 SEE SHEET 19

MATCH LINE -Y3RPD- STA. 14+00 SEE SHEET 17

+10.61 -Y3RPA- 75.00' RT
+64.04 -Y3RPA- 75.00' RT
+64.04 -Y3RPA- 75.00' RT
+00.00 -Y3RPA- 75.00' RT
+00.00 -Y3RPA- 75.00' RT
+00.00 -L- 125.00' LT

CHORD
CA
RW

25.00' TYP
+39.04
CL B RIP RAP EST. 1 TON EST. 5 SY GF (1806)
CL B RIP RAP EST. 1 TON EST. 5 SY GF (1804)
300.00' TAPER
15" RCP-IV
FS SEE DETAIL B 2GI-D (1805)
FS SEE DETAIL B 2GI (1803)
-BL-42
-BL-43
-L-
S 27° 02' 25.2" E

WOODS
F
FS
4' PS
10' PS
24' PS
05
04
03
02
01
00

WEYERHAEUSER COMPANY
DB 1048 - PG 1014
4

2
DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

S 51° 28' 55" W 634.98'

G4 – GATED ENCROACHMENT SEE X-141 FOR GRADE 12' PAVED W/2' SHLD

RETAIN EXIST. 24" CMP
+40 -L- 198' LT
+92 -L- 198' LT
+45 -L- 125' LT
+01 -L- 125' LT
DUE
END WW FENCE
BEGIN WW FENCE
BEGIN SBG +08.00 10'R 10'R
45° CAAP W/ELBOWS
CAT-1
8:1
TB 2GI (1809)
CL B RIP RAP EST. 1 TON EST. 5 SY GF (1810)

POWERLINE EASEMENT
100.00'
25.00' TYP +73.00
LATERAL 'V' DITCH SEE DETAIL L DDE = 89 CY
CHORD
-Y3RPD- SC Sta. 1+98.00
+98.00 -Y3RPD- 100.00' LT
T-TURNAROUND
20'R (1807) 20'R (1808)
18'-4"
+75 -Y3RPD- 170' LT
+75 -Y3RPD- PROP R/W 160' LT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2
BMI4
S 46° 41' 58" W 50.00'

GTD
-Y3RPD-
18" RCP-V
STANDARD 2' BASE DITCH SEE DETAIL V S=0.000 FT/FT DDE= 3 CY
TIE PROP. DITCH TO NATURAL GROUND
CL B RIP RAP EST. 3 TONS EST. 10 SY GF (1802)
(1801)
+67.59 -Y3RPD- 100.00' LT
+65.59 -Y3RPD- 100.00' LT
-Y3RPD- CS Sta. 11+67.59
-Y3RPD- ST Sta. 13+65.59
N 40° 41' 19" W 450.10'

WEYERHAEUSER COMPANY
DB 1048 - PG 1014
4

10

-Y3RPD-
PIs Sta 1+14.45 PI Sta 7+01.01 PIs Sta 12+33.61
Θs = 1° 23' 54.7" Δ = 37° 38' 15.6" (LT) Θs = 3° 50' 34.8"
Θs = 3° 50' 37.2" D = 3° 52' 54.6" Ls = 198.00'
Ls = 198.00' L = 969.59' LT = 132.03'
LT = 114.45' T = 503.01' ST = 66.03'
ST = 83.68' R = 1,476.00'
SE = 0.060
R0 = 200.00'
DS = 50 mph

FRANK A. MARMAROSE, et ux
DB 1037 - PG 889
5

SEE SHEETS 58 FOR PROFILE -L-
SEE SHEETS 79 FOR PROFILE -Y3RPA-
SEE SHEETS 82 FOR PROFILE -Y3RPD-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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mmollin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	19
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 PHONE (919) 781-4865 Fax
NC License NO.: F-0105

-L-
PI Sta 256+33.26
Δ = 49° 58' 05.0" (RT)
D = 1° 23' 49.6"
L = 3,576.51'
T = 1,910.94'
R = 4,101.00'
SE = 0.050
RO = 250.00'
DS = 70 mph
PIs Sta 274+18.85
Θs = 2° 30' 53.3"
Ls = 360.00'
LT = 240.02'
ST = 120.02'

NAD 83

POWERLINE EASEMENT .00020

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

270 275 280

MATCH LINE STA. 268+00 SEE SHEET 18

MATCH LINE STA. 282+00 SEE SHEET 20

+25.00 -L- 125.00' LT
+46 -L- 151' LT
+73 -L- 135' LT BEGIN WW FENCE
+40 -L- 125' LT
+15 -L- 125' LT
POWERLINE EASEMENT
ROAD RIDGE
HW SEE SPECIAL DETAIL (SHEET 2C-1)
END WW FENCE
SPECIAL LATERAL 'V' DITCH SEE DETAIL W DDE = 631 CY
+98.83 -L- 125.00' LT
+50 -L- 150' LT
CL B RIP RAP EST. 3 TONS EST. 10 SY GF
CHORD
+00 -L- 140' LT
+58.83 -L- 125.00' LT
+61 -L- PROP R/W 140' LT
+80.00 -L- 125.00' LT 150.00' LT
CL B RIP RAP EST. 1 TON EST. 5 SY GF
24" RCP-IV
15" CAAP W/ELBOWS
18" CAAP W/ELBOWS
18" RCP-IV
30" RCP-IV
15" RCP-IV
84" RCP-V BURIED 1'
JB w/SLAB LID SEE SPECIAL DETAIL (SHEET 2C-1)
50.00' TYP
PROP SBG
WOODS
TB 2GI
FS SEE DETAIL B
-BL-44
-BL-45
-BL-46
-BL-47
N 8° 29' 42.1" W
8:1
GREU (TL-3) BEGIN SBG +50.00
CL B RIP RAP EST. 3 TONS EST. 10 SY GF
CL B RIP RAP EST. 2 TONS EST. 7 SY GF
CL I RIP RAP EST. 77 TONS EST. 150 SY GF
659.25' ACCELERATION LANE
300' TAPER
500.00' MEDIAN TAPER
LATERAL 'V' DITCH SEE DETAIL L DDE = 89 CY
+40.75 -L- 150.00' RT
+00 -L- 150' RT
TOE PROTECTION CLASS B RIP RAP EST = 90 TONS GT: EST = 200 SY SEE DETAIL J
+98.83 -L- 150.00' RT
+26 -L- 172' RT
+40 -L- 200' RT
+09 -L- 177' RT
+85 -L- PROP R/W
+50.00 -L- 150.00' RT
RIPRAP SHALL BE INSTALLED FLUSH WITH CHANNEL BANKS AND BED
+00.00
+58.83 -L- 125.00' RT
150' R/W
125' R/W

-L- POC Sta. 268+40.75 = -Y3RPD- ST Sta. 0+00.00

-Y3RPD-
PIs Sta 1+14.45
Θs = 1° 23' 54.7"
Θs = 3° 50' 37.2"
Ls = 198.00'
LT = 114.45'
ST = 83.68'

-L- CS Sta. 272+98.83

-L- ST Sta. 276+58.83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE SHEET 58 FOR PROFILE -L-
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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ahurd

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	20
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Voice (919) 781-4865 Fax
NC License NO.: F-0105

MATCH LINE STA. 282+00 SEE SHEET 19

MATCH LINE STA. 296+00 SEE SHEET 21

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

285 290 295

CLASS II RIP RAP
+50.00 -L- 125.00' LT 150.00' LT
END SBG +64.71
TB 2GI
TYPE B-77
150' R/W
24" RCP-V
025
2003
2GI
FS SEE DETAIL B TYPE B-77
15" RCP-IV
2001
125' R/W
15" CAAP W/ELBOWS
2002
CL B RIP RAP EST. 1 TON EST. 5 SY GF
END WW FENCE
-BL-48
+50.00 -L- 125.00' RT
WOODS
JS MIT
SOUTHWEST PRONG OF SLOCUM CREEK
BZ 1
BZ 2
JS
SF
-L-
N 8° 29' 42" W
-BL-49
BEGIN WW FENCE
+75.00 -L- 125.00' LT
+10 -L- 125' LT 135' LT
TOE PROTECTION CLASS B RIP RAP EST = 35 TONS GT EST = 70 SY SEE DETAIL J
CLASS II RIP RAP
PDE
+90 -L- 125' LT 135' LT
CL B RIP RAP EST. 2 TONS EST. 7 SY GF
2016
2010
18" CAAP W/ELBOWS
2015
TYPE B-77
TB 2GI
18" RCP-IV
BEGIN SBG +60.35
CL B RIP RAP EST. 1 TON EST. 5 SY GF 15" RCP-III
2012
END SBG +05.00
2011
GREU (TL-3) 8:1
250' R/W
10' PS
2009
2GI-D FS SEE DETAIL B
60
4' PS
BEGIN SBG +60.30
2005
18" RCP-IV
TB 2GI
TYPE B-77
2006
2017
CAT-1 8:1
END SBG +31.00
2008
CL B RIP RAP EST. 2 TONS EST. 7 SY GF
+00.00
500.00' MEDIAN TAPER
+75.00 -L- 125.00' RT 150.00' RT
+70.00 -L- 125.00' RT 150.00' RT

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE SHEETS 59 FOR PROFILE -L-
SEE SHEET 2B-8 SKETCH 6 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	21
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Phone (919) 781-4865 Fax
NC License NO.: F-0105

MATCH LINE -Y4- STA. 40+80 SEE SHEET 45

MATCH LINE STA. 296+00 SEE SHEET 20

MATCH LINE STA. 310+00 SEE SHEET 22

MATCH LINE -Y4- STA. 48+30 SEE SHEET 46

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

-Y4DR- POT Sta. 16+03.02

-Y4- POT STA. 44+71.82 =
-L- POT STA. 302+41.24
△ = 105° 30' 45.6"

500.00' MEDIAN TAPER

SEE SHEET 59 FOR PROFILE -L-
SEE SHEET 83 FOR PROFILE -Y4-
SEE SHEET 90 FOR PROFILE -Y4DR-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

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amadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	22
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
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NC License NO.: F-0105

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

310 315 320

MATCH LINE STA. 310+00 SEE SHEET 21

SPECIAL CUT 6' BASE DITCH SEE DETAIL Y

SPECIAL CUT 6' BASE DITCH SEE DETAIL Z

2116 HW 10' PS 24' 025 4' PS RW 4' PS 250' 4' PS 24' 025 10' PS

RIDING TRAIL

-L- N 8° 29' 42.1" W

-BL-53 -BL-54

2GI-D 2203 FS SEE DETAIL B

15" RCP-IV

CL B RIP RAP EST. 1 TON EST. 5 SY GF 2202

10'R 10'R

FILL EXISTING CHANNEL AND GRADE TO DRAIN

GRADE TO DRAIN

GRADE TO DRAIN

BEGIN WW FENCE

WOODS

SPECIAL CUT DITCH SEE DETAIL X

G5 - GATED ENCROACHMENT SEE X-191 FOR GRADE 12' PAVED W/2' SHLD

END WW FENCE

BM16 CLIP

MATCH LINE STA. 324+00 SEE SHEET 23

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

S 27°35'18" E 916.00'

EDWARD J. CIESZKO (ESTATE)
DB 1704 - PG 242
DB 1605 - PG 238
6

SEE SHEETS 60 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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dmadiso

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	23
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Phone (919) 781-4688 Fax
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
(2)

-L-
PIs Sta 338+17.02
Θs = 3° 08' 39.4"
Ls = 360.00'
LT = 240.04'
ST = 120.03'

NAD 83

325 330 335

MATCH LINE STA. 324+00 SEE SHEET 22

EDWARD J. CIESZKO (ESTATE)
DB 1704 - PG 242
DB 1605 - PG 238

SPECIAL CUT 6' BASE DITCH SEE DETAIL Z
SPECIAL CUT 8' BASE DITCH SEE DETAIL D
SPECIAL CUT 8' BASE DITCH SEE DETAIL D
+76.98 -L- 125.00' LT
+00.00 -L- 100.00' LT
CHORD
50.00' TYP
+84.98
10' FS
24' 025 02 01 00 01 02 24' 03
4' PS
250' R/W
15" RCP-IV
18" RCP-IV
72" RCP-IV BURIED 1'
2-72" RCP-IV BURIED 1'
-L- N 8° 29' 42.1" W
-BL-55
-BL-56
2GI-D
2GI
FS SEE DETAIL B
CL B RIP RAP EST. 2 TONS EST. 7 SY GF
CL I RIP RAP EST. 57 TONS EST. 104 SY GF
SPECIAL CUT 8' BASE DITCH SEE DETAIL D
CLASS I RIP RAP EST. 57 TONS EST. 104 SY GF
+76.98 -L- 125.00' RT
+00.00 -L- 100.00' RT
WOODS
W.L.B.
230 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313
CA RW

MATCH LINE STA. 338+00 SEE SHEET 24

-L- TS Sta. 335+76.98

EDWARD J. CIESZKO (ESTATE)
DB 1704 - PG 242
DB 1605 - PG 238
(6)

SEE SHEET 60 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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ajmedlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brian K. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4627 Fax
NC License NO.: F-0105

NAD 83

-L-

PI Sta 338+17.02	PI Sta 342+17.43	PI Sta 346+16.55	PI Sta 354+28.66
Θs = 3° 08' 39.4"	Δ = 9° 46' 26.7" (RT)	Θs = 3° 08' 39.4"	Θs = 3° 47' 00.6"
Ls = 360.00'	D = 1° 44' 48.6"	Ls = 360.00'	Ls = 390.00'
LT = 240.04'	L = 559.54'	LT = 240.04'	LT = 260.06'
ST = 120.03'	T = 280.45'	ST = 120.03'	ST = 130.05'
	R = 3,280.00'		
	SE = 0.060		
	R0 = 300.00'		
	DS = 70 mph		

SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

MATCH LINE STA. 338+00 SEE SHEET 23

MATCH LINE STA. 352+00 SEE SHEET 25

EDWARD J. CIESZKO (ESTATE)
DB 1704 - PG 242
DB 1605 - PG 238
6

LARRY S. PAUL
DB 1033 - PG 750
7

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE SHEETS 6I FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

8/2/2018
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amcallan

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Phone (919) 781-4629 Fax
NC License NO.: F-0105

NAD 83

-L-
PIs Sta 354+28.66 PI Sta 365+79.01
Θs = 3° 47' 00.6" Δ = 38° 07' 30.5" (LT)
Ls = 390.00' D = 1° 56' 24.9"
LT = 260.06' L = 1,964.95'
ST = 130.05' T = 1,020.41'
R = 2,953.00'
SE = 0.070
R0 = 350.00'
DS = 70 mph

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

355 360 365

SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

BMI8

MATCH LINE STA. 352+00 SEE SHEET 24

MATCH LINE STA. 366+00 SEE SHEET 26

-L- SC Sta. 355+58.60

+58.60 -L- 100.00' LT

SPECIAL CUT 3' BASE DITCH SEE DETAIL AA

SPECIAL CUT 8' BASE DITCH SEE DETAIL D

SPECIAL CUT 6' BASE DITCH SEE DETAIL Z

50.00' TYP

+58.60

2GI FS SEE DETAIL B

-BL-60

-BL-61

36" RCP-IV

15" RCP-III

15" RCP-IV

30" RCP-IV

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CLASS I RIP RAP EST. 10 TONS EST. 23 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 8 TONS EST. 21 SY GF

STANDARD 6' BASE DITCH SEE DETAIL H S=0.000 FT/FT DDE= 40 CY

TIE PROP. DITCH TO NATURAL GROUND

TDE

DO NOT CUT/REMOVE TREES OUTSIDE OF R/W

+58.60 -L- 100.00' RT

+30 -L- PROP R/W 110' LT

+70 -L- PROP R/W 110' LT

+98 -L- PROP R/W

+50 -L- PROP R/W

+40 -L- 198' RT

+65 -L- 219' RT

WOODS

CHORD

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE SHEET 6I FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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amadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	26
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4627 Fax
NC License NO.: F-0105

-L-

PI Sta 365+79.01
△ = 38° 07' 30.5" (LT)
D = 1° 56' 24.9"
L = 1,964.95'
T = 1,020.41'
R = 2,953.00'
SE = 0.070
RO = 350.00'
DS = 70 mph

PIs Sta 376+53.61
Θs = 3° 47' 00.6"
Ls = 390.00'
LT = 260.06'
ST = 130.05'

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE PROJECT COMMITMENTS
FOR SPECIAL CLEARING FOR
-L- STA. 338+00 TO 393+00

MATCH LINE STA. 366+00 SEE SHEET 25

MATCH LINE STA. 380+00 SEE SHEET 27

370

375

-L- CS Sta. 375+23.56

-L- ST Sta. 379+13.56

POWERLINE EASEMENT

WOODS

SPECIAL CUT 6' BASE DITCH
SEE DETAIL Z

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

18" RCP-IV

15" RCP-IV

2GI

-BL-62

-BL-63

-L-

MAINTAIN EXISTING DITCH

+90 -L- 170' LT

+09 -L- 153' LT

+95 -L- 138' LT

+60 -L- 140' LT

+58 -L- 112' LT

+23.56 -L- 100.00' LT

G7 - GATED ENCROACHMENT
SEE X-211 FOR GRADE
12' PAVED W/2' SHLD

TIE TO EXISTING DITCH

STANDARD 2' BASE DITCH
SEE DETAIL V
S=0.002 FT/FT
DDE= 12CY

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

BEGIN WW FENCE

+13.56 -L- 100.00' LT

+35 -L- PROP RW

+80 -L- PROP RW

+66 -L- PROP RW

END WW FENCE

CHORD

50.00' TYP

REMOVE

36" RCP-IV

60" EQUALIZER

FS
SEE DETAIL B

2GI

CAT-1
10'R

TDE

+13.56 -L- 100.00' RT

+30 -L- 100' RT

+23.56 -L- 100.00' RT

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

STANDARD 2' BASE DITCH
SEE DETAIL V
S=0.000 FT/FT
DDE= 142CY

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE SHEETS 62 FOR PROFILE -L-

SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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dmoulton

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	27
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Phone (919) 781-4629 Fax
NC License NO.: F-0105

-L-
PIs Sta 389+15.83 PI Sta 392+92.64
Θs = 1° 26' 08.8" Δ = 5° 23' 33.7" (RT)
Ls = 296.00' D = 0° 58' 12.5"
LT = 197.34' L = 555.87'
ST = 98.67' T = 278.14'
R = 5,906.00'
SE = 0.040
R0 = 200.00'
DS = 70 mph

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
(2)

380 385 390

S 07° 09' 18" E 921.96'

WEYERHAUSER COMPANY
DB 370 - PG 53
DB 370 - PG 57
MB 1 - PG 220
(8)

SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

MATCH LINE STA. 380+00 SEE SHEET 26

MATCH LINE STA. 394+00 SEE SHEET 28

+18.49 -L- 100.00' LT
+14.49 -L- 100.00' LT
+00.00 -L- 100.00' LT 125.00' LT
CHORD
50.00' TYP
+14.49
WOODS
8:1 CAT-1
10' PS
24'
4' PS
200' R/W
250' R/W
12' PS
025 00 01 02 03 04
N 38° 07' 28.3" W
-L-
-BL-65
-BL-66
-BL-67
2GI
(2701)
FS SEE DETAIL B
(2750)
15" RCP-III
36" RCP-III
SQUARE RCP
10'R
BEGIN WW FENCE
END WW FENCE
+87 -L- PROP R/W
(2704) CL I RIP RAP EST. 15 TONS EST. 30 SY GF
MAINTAIN EXISTING DITCH
+40 -L- 158' RT
12' PAVED
12-30 -L- PROP R/W
36" RCP-IV
PDE
TDE
+56 -L- 181' RT
+95 -L- 200' RT
+12 -L- 185' RT
MAINTAIN EXISTING DITCH
TIE TO EXISTING DITCH
G8 - GATED ENCROACHMENT SEE X-212 FOR GRADE 12' PAVED W/2' SHLD
(2702) CL B RIP RAP EST. 1 TON EST. 5 SY GF
+18.49 -L- 100.00' RT
+14.49 -L- 100.00' RT
+00.00 -L- 100.00' RT 125.00' RT
(2751) CL B RIP RAP EST. 1 TON EST. 5 SY GF
(2706)
BMI9
-L- TS Sta. 387+18.49
-L- SC Sta. 390+14.49

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
(2)

SEE SHEET 62 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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amadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	28
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Phone (919) 781-4865 Fax
NC License NO.: F-0105

-DRI-
PI Sta 10+75.64
Δ = 67° 31' 57.8" (LT)
D = 143° 14' 22.0"
L = 47.15'
T = 26.74'
R = 40.00'

PI Sta 13+27.52
Δ = 69° 08' 00.4" (LT)
D = 143° 14' 22.0"
L = 48.26'
T = 27.56'
R = 40.00'

-L-
PI Sta 392+92.64
Δ = 5° 23' 33.7" (RT)
D = 0° 58' 12.5"
L = 555.87'
T = 278.14'
R = 5,906.00'
SE = 0.040
RO = 200.00'
DS = 70 mph

PIs Sta 396+69.04
Θs = 1° 26' 08.8"
Ls = 296.00'
LT = 197.34'
ST = 98.67'

NAD 83

WEYERHAUSER COMPANY
DB 370 - PG 53
DB 370 - PG 57
MB 1 - PG 220
8

MATCH LINE STA. 394+00 SEE SHEET 27

MATCH LINE STA. 408+00 SEE SHEET 29

-DRI- POT Sta. 13+78.96
-DRI- POT Sta. 10+00.00
-DRI- PT Sta. 10+96.04
-DRI- PC Sta. 10+48.90
-DRI- PT Sta. 13+48.23
-DRI- PC Sta. 12+99.96
-L- CS Sta. 395+70.37
-L- ST Sta. 398+66.37
BM20
N 37° 40' 30.0" E
S 81° 00' 22.7" W
N 29° 51' 36.9" W
-BL-68
-BL-69
-L-

+70.37 -L- 125.00' LT
+66.37 -L- 125.00' LT
+86 -L- 240' LT
+30 -L- 218' LT
+22 -L- 180' LT
+52 -L- 225' LT
+16 -L- 200' LT
+15 -L- 185' LT
+69 -L- 129' LT
+87 -L- 125' LT
+70.37 -L- 125.00' RT
+66.37 -L- 125.00' RT
+60 -L- 125' RT
+68 -L- 125' RT
+60 -L- 225' RT
+70 -L- 185' RT
+48 -L- 250' RT
+15 -L- 230' RT

CHORD
50.00' TYP
+20.37

CL B RIP RAP EST. 1 TON EST. 5 SY GF (2805)
CL I RIP RAP EST. 57 TONS EST. 104 SY GF (2810)
CL I RIP RAP EST. 57 TONS EST. 104 SY GF (2811)
CL B RIP RAP EST. 1 TON EST. 5 SY GF (2803)
CL B RIP RAP EST. 1 TON EST. 5 SY GF (2807)

24" RCP-III
15" RCP-III
72" RCP-III, BURIED 1 FT
FS SEE DETAIL B
2GI
HW

GREU (TL-3) 8:1
FILL EXIST. DITCH
GRADE to DRAIN
END WW FENCE
BEGIN WW FENCE
TIE TO EXIST. DITCH
SPECIAL LATERAL 'V' DITCH SEE DETAIL CC
MAINTAIN EXIST. DITCH
20' GRAVEL DR. CONNECTOR 2' SHLDRS SEE X- 220
STANDARD 6' BASE DITCH SEE DETAIL BB DDE= 585 C.Y.
STANDARD 6' BASE DITCH SEE DETAIL BB DDE=520 C.Y.
GRAVEL CUL-DE-SAC TURNAROUND

WOODS
NCDOT GPS R1015-18
SR 1005 (OLD GEORGETOWN RD)

WEYERHAUSER COMPANY
DB 370 - PG 53
DB 370 - PG 57
MB 1 - PG 220
8

SEE SHEETS 63 FOR PROFILE -L-
SEE SHEETS 91 FOR PROFILE -DRI-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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dmallin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	29
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook F. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

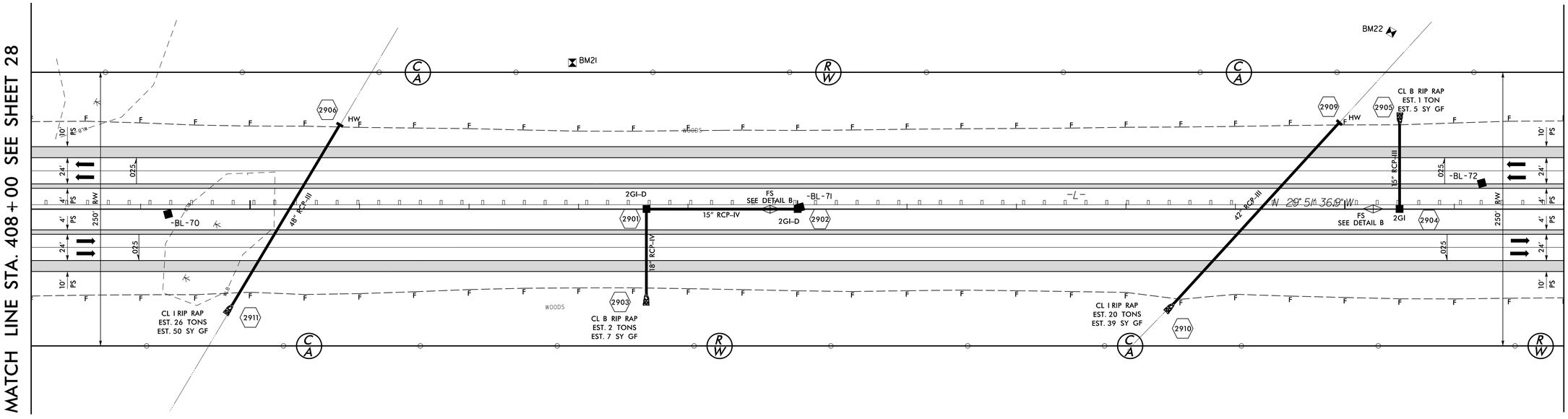
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Phone (919) 781-4628 Fax
NC License NO.: F-0105

NAD 83

WEYERHAUSER COMPANY
DB 370 - PG 53
DB 370 - PG 57
MB 1 - PG 220
8

410 415 420

MATCH LINE STA. 408+00 SEE SHEET 28



MATCH LINE STA. 422+00 SEE SHEET 30

WEYERHAUSER COMPANY
DB 370 - PG 53
DB 370 - PG 57
MB 1 - PG 220
8

SEE SHEET 63 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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amadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	30
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
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(919) 781-4626 (919) 781-4627 Fax
NC License NO.: F-0105

NAD 83

WEYERHAUSER COMPANY
DB 370 - PG 53
DB 370 - PG 57
MB 1- PG 220
8

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
SEE CROATAN PURCHASE TRACT 41
2

425 430 435

S 29°05'25" W 3984.46'

MATCH LINE STA. 422+00 SEE SHEET 29

MATCH LINE STA. 436+00 SEE SHEET 31

-L- N 29° 51' 36.9" W

-BL-73

30" RCP-III

42" RCP-III

15" RCP-III

-BL-74
-BY-

G9 – GATED ENCROACHMENT
SEE X-230 FOR GRADE
12' PAVED W/2' SHLD

END WW FENCE
+75 -L- 160' LT
+68 -L- 125' LT

BEGIN WW FENCE
+42 -L- 160' LT
+42 -L- 125' LT

MEDIAN V DITCH
SEE DETAIL NN

WOODS

CL B RIP RAP
EST. 8 TONS
EST. 21 SY GF

CL I RIP RAP
EST. 20 TONS
EST. 39 SY GF

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

CL B RIP RAP
EST. 1 TONS
EST. 5 SY GF

+98 -L- 125' RT
+98 -L- 187' RT

GRAVEL
T-TURNAROUND

BM23
-BY- 604

FS
SEE DETAIL B

SEE SHEETS 64 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

WEYERHAUSER COMPANY
DB 370 - PG 53
DB 370 - PG 57
MB 1- PG 220
8

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
SEE CROATAN PURCHASE TRACT 41
2

11/2/2018
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dmedlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	31
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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(919) 781-4626 Phone (919) 781-4628 Fax
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
SEE CROATAN PURCHASE TRACT 41
2

LENA EBRON
DB 221 - PG 146
9

R. GRAHAM WILLIAMS, et ux
DB 1540 - PG 350
10

BOLING FAMILY INVESTMENTS, L.L.C., et al
DB 796 - PG 303
DB 1742 - PG 825
11

N 62°30'08" E
3503.40'

S 62°30'08" W
3555.43'

NAD 83

440

445

MATCH LINE STA. 436+00 SEE SHEET 30

MATCH LINE STA. 450+00 SEE SHEET 32

MEDIAN V DITCH
SEE DETAIL NN

WOODS

3105 3104 3103 3102 3101

-BL-75 -BL-76 -L- 2GI-D

N 29° 51' 36.9" W

FS
SEE DETAIL B

36" RCP-IV EQUALIZER PIPE

30" RCP-V

24" RCP-V EQUALIZER PIPE

24' 025 10' PS 4' PS 250' R/W

SEE SHEET 64 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	32
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brian F. Anderson

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moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4627 Fax
NC License NO.: F-0105

-L-
PIs Sta 456+23.60 PI Sta 466+31.56
Θs = 8°07' 07.0" Δ = 45° 20' 08.3" (RT)
Ls = 558.00' D = 2° 54' 35.6"
LT = 372.39' L = 1,557.98'
ST = 186.36' T = 822.35'
R = 1,969.00'
SE = 0.100
RO = 500.00'
DS = 70 mph

NAD 83

N 29°51'36.9"W
3,380,052.29 N
3,555,557.43 E

R. GRAHAM WILLIAMS, et ux
DB 1540 - PG 350
10

BOLING FAMILY INVESTMENTS, L.L.C., et al
DB 796 - PG 303
DB 1742 - PG 825
11

CLYDE O. BELANGIA, JR., et al
DB 675 - PG 400
12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 1550 - PG 641
PC "F" - SLIDE 174E
13

450
455
460

MATCH LINE STA. 450+00 SEE SHEET 31

MATCH LINE STA. 464+00 SEE SHEET 33

-L- TS Sta. 452+51.21

-L- SC Sta. 458+09.21

+51.21 -L- 125.00' LT

+51.21 -L- 125.00' RT

+09.21 -L- 125.00' LT

+09.21 -L- 125.00' RT

CHORD 50.00' TYP

CHORD

BM24

END WW FENCE

BEGIN WW FENCE
SEE SPECIAL DETAIL (SHEET 2C-2)

REMOVE

MEDIAN 'V' DITCH
SEE DETAIL NN

-BL-77 2GI-D SEE DETAIL B

-BL-78

-BL-79

FS
SEE DETAIL B

CL B RIP RAP
EST. 1 TONS
EST. 5 SY GF

CL I RIP RAP
EST. 26 TONS
EST. 50 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL I RIP RAP
EST. 57 TONS
EST. 104 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

15" RCP-IV

18" RCP-IV

24" RCP-IV

30" RCP-IV

36" RCP-IV

42" RCP-IV

84" RCP-IV, BURIED 1'

EQUIVALENT PIPE

3201 3202 3203 3204 3205 3206 3207 3208 3209 3210 3214 3215 3216 3217

BOLING FAMILY INVESTMENTS, L.L.C., et al
DB 796 - PG 303
DB 1742 - PG 825
11

CLYDE O. BELANGIA, JR., et al
DB 675 - PG 400
12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 1550 - PG 641
PC "F" - SLIDE 174E
13

SEE SHEETS 65 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

1/2/2018
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dmadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	33
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4865 Fax
NC License NO.: F-0105

NAD 83

-L-
PI Sta 466+31.56
Δ = 45° 20' 08.3" (RT)
D = 2° 54' 35.6"
L = 1,557.98'
T = 822.35'
R = 1,969.00'
SE = 0.100
RO = 500.00'
DS = 70 mph

PIs Sta 475+53.55
Θs = 8° 07' 07.0"
Ls = 558.00'
LT = 372.39'
ST = 186.36'

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 1550 - PG 641
PC "F" - SLIDE 174E
13

470

475

465

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S=0.00273ft/ft
DDE=14 c.y.

G15 - GATED ENCROACHMENT
SEE X-241 FOR GRADE
20' PAVED W/2' SHLD

+80 -L- 200' LT
TIE TO EXIST. DITCH

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S=0.0012ft/ft
DDE=45 c.y.

+60 -L- 200' LT
+39 -L- 163' LT
END WW FENCE
+22 -L- 125' LT
BEGIN WW FENCE
+25 -L- 125' LT

SPECIAL LATERAL 'V' DITCH
SEE DETAIL R

TOE PROTECTION
CLASS B RIP RAP
EST. = 76 TONS
EST. = 140 SY GT
SEE DETAIL J

+67.19 -L- 125.00' LT

BL-570
BL-571
BL-572
BL-573
BL-80 -BY1-

CAT-1
GREU (TL-3)
8:1

3305
3307
3308
3310
3311
3301
3303
3304
3302
3309
3312
3306

HW
10'R
10'L
FS
2GI
SEE DETAIL B

36" RCP-IV
15" RCP-IV
24" RCP-IV

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

CL I RIP RAP
EST. 10 TONS
EST. 23 SY GF

TOE PROTECTION
CLASS B RIP RAP
EST. = 43 TONS
GT EST. = 115 SY
SEE DETAIL J

CHORD
50.00' TYP

-L- CS Sta. 473+67.19

+67.19 -L- 125.00' RT

G14 - GATED ENCROACHMENT
SEE X-241 FOR GRADE
20' PAVED W/2' SHLD

+15 -L- 125' RT
SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S=0.0028ft/ft
DDE=16 c.y.

TIE TO EXIST. DITCH
+00 -L- 135' RT
BEGIN WW FENCE
CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF
+47 -L- 135' RT
+35 -L- 125' RT
END WW FENCE

TIE TO EXIST. DITCH
SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S=0.0016ft/ft
DDE= 23 c.y.

MATCH LINE STA. 464+00 SEE SHEET 32

MATCH LINE STA. 478+00 SEE SHEET 34

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 1550 - PG 641
PC "F" - SLIDE 174E
13

GPS R1015-20

SEE SHEET 65 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	34
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4865 Fax
NC License NO.: F-0105

MATCH LINE STA. 478+00 SEE SHEET 33

MATCH LINE STA. 492+00 SEE SHEET 35

-L-
PIs Sta 475+53.55
Θs = 8° 07' 07.0"
Ls = 558.00'
LT = 372.39'
ST = 186.36'

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
NO DEED REFERENCE
SEE CROATAN PURCHASE TRACT 16c
2

NAD 83

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 1550 - PG 641
PC "F" - SLIDE 174E
13

480 485 490

TIE PROP. DITCH TO NATURAL GROUND

+25.19 -L- 125.00' LT
+67.19
50.00' TYP
CHORD
-BL-574
-BL-575
-BL-576
36" RCP-IV EQUALIZER PIPE
36" RCP-IV
+05.00 -L- 125.00' LT
3409
3410
HW
10' PS
24'
4' PS
2GI
FS SEE DETAIL B
3401
3407
3405
3402
3403
3408
3406
3412
3404
15" RCP-III
250' RW
CL B RIP RAP EST. 1 TON EST. 5 SY GF
CL B RIP RAP EST. 1 TON EST. 5 SY GF
CL I RIP RAP EST. 10 TONS EST. 23 SY GF
-L- N 31° 42' 45.4" E
+25.19 -L- 125.00' RT
+05.00 -L- 125.00' RT
-L- ST Sta. 479+25.19
DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
NO DEED REFERENCE
SEE CROATAN PURCHASE TRACT 16c
2
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 1550 - PG 641
PC "F" - SLIDE 174E
13

SEE SHEETS 66 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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gmadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	35
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER J. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook F. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
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(919) 781-4626 Phone (919) 781-4628 Fax
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
NO DEED REFERENCE
SEE CROATAN PURCHASE TRACT 16c
2

NAD 83

495

500

505

FOREST RD

CP & L RIGHT OF WAY NO REFERENCE

70.00'

EXIST R/W

-GI2- POT Sta. 10+00.00
-L- POT STA 495+50.00

MATCH LINE STA. 492+00 SEE SHEET 34

MATCH LINE STA. 505+00 SEE SHEET 36

+52.00 -L- 125.00' LT

CL B RIP RAP EST. 1 TON EST. 5 SY GF

BEGIN SBG +50.00

3510 3515 3517 3524 3514 3513

CAT-1 8:1

TB 2GI

15" CAAP W/ELBOWS

15" RCP-III

PROP SBG

9.67' FS

-BL-577 15" RCP-III

-BL-578 42" RCP-IV

-BL-579 -L- -BL-580

FS SEE DETAIL B

2GI 3506 3504 3503 3403

N 31° 42' 45.4" E

GREU (TL-3)

24" RCP-IV 15" RCP-IV 36" RCP-IV

3404 3502 3507 3518 3523 3508 3511 3512

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL I RIP RAP EST. 10 TONS EST. 23 SY GF 3411

CL B RIP RAP EST. 1 TON EST. 5 SY GF

END PAVING -G12- STA 10+67.00 BEGIN GRADE G12 STA 10+89.00

10'R

S 58° 17' 14.6" E

+10 -L- PROP R/W

CL I RIP RAP EST. 13 TONS EST. 30 SY GF

BEGIN SBG +45.00

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

TB 2GI

END SBG +24.05

TYPE B-77

N 34° 00' 45.4" E

-GI2- PC Sta. 10+89.96

+14 -L- PROP R/W

+52.00 -L- 125.00' RT

+95 -L- 173' RT

+16 -L- 185' RT

+65 -L- EXIST R/W

3519 3520

N 64° 33' 25.8" E

G12 - GATED ENCROACHMENT SEE X-249 12' PAVED/GRAVEL W/2' SHLD

-GI2- PT Sta. 11+39.84

END CONSTRUCTION -GI2- STA 13+47.00

CL B RIP RAP EST. 1 TON EST. 5 SY GF

EXIST RR R/W 150.00' RT -L-

-L- POT Sta. 504+56.80 =
-RP2C- POT Sta. 0+00.00 (47' RT)
Δ = 2° 18' 00"

+73 -L- 236' RT

+02 -L- 256' RT

+37 -L- EXIST R/W

3521 3522

RR -EY3- POT Sta. 16+92.14

S 25° 24' 49.2" E

-BY2-584

-GI2-
PI Sta 11+17.19
Δ = 57° 09' 19.6" (LT)
D = 114° 35' 29.6"
L = 49.88'
T = 27.24'
R = 50.00'
SE = NC

-GI2- POT Sta. 13+83.11

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 1550 - PG 641
PC "F" - SLIDE 174E
13

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
NO DEED REFERENCE
SEE CROATAN PURCHASE TRACT 16c
2

SEE SHEET 66 FOR PROFILE -L-
SEE SHEET 85 FOR PROFILE -RP2C-
SEE SHEET 91 FOR PROFILE -GI2-
SEE SHEET 2B-9 SKETCH 5 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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amadlin

REVISIONS

PROJECT REFERENCE NO. R-1015 | SHEET NO. 36 | R/W SHEET NO.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 015849 — 6/18/2018 — R. BRAD

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032581 — 6/18/2018 — MICHAEL E. ANDERSON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TRANSPORTATION MOBILITY & TECHNICAL SERVICES UNIT, 1582 MAIL SERVICE CENTER, RALEIGH, NC 27699-1582, TEL: 919-707-6850, FAX: 919-250-4174

-L- POT Sta 506+32.85 =
RR -EY3- POT Sta 13+60.59
Δ = 122°52'25.4"

RR -EY2- POT Sta 10+00.00

ATLANTIC & EAST CAROLINA RAILROAD

S 25°24'49.2" E

-BY2-583

MATCH LINE STA. 505+00 SEE SHEET 35

-RP2C- POT Sta 11+41.52 =
RR -EY3- POT Sta 13+70.32
Δ = 120°34'25.4"

-RP2C- TS Sta 3+26.32

2 @10'x8' RCBC

BEGIN GRADE -RP2C- ST A 2+75.00

-RP2C- SC Sta 5+22.32

-RP2C- CS Sta 11+86.23

-RP2C- ST Sta 12+45.23

-RP2C- ST Sta 14+25.36

-RP2C- SC Sta 15+08.36

-RP2C- ST Sta 15+91.36

-RP2C- ST Sta 17+74.36

-RP2C- ST Sta 18+57.36

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-RP2C- CS Sta 20+19.36

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-RP2C- SC Sta 718+22.36

-RP2C- ST Sta 719+05.36

-RP2C- ST Sta 719+88.36

-RP2C- SC Sta 720+71.36

-RP2C- ST Sta 721+54.36

-RP2C- ST Sta 722+37.36

-RP2C- SC Sta 723+20.36

-RP2

PROJECT REFERENCE NO.	SHEET NO.
R-1015	37
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brian E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Phone (919) 781-4865 Fax
NC License NO.: F-0105

8/17/99

MATCH LINE -RP2A STA. 86+80 SEE SHEET 36

MATCH LINE STA. 533+50 SEE SHEET 36

MATCH LINE STA. 547+00 SEE SHEET 38

DERRICK HIMAN (SPRINT) AT 919-637-6952 FOR ADDT'L. INFO.

JOANN COWAN TADLOCK DB 942 PG 569 (23)

ROYCE B. DAW DB 462 PG 325 (25)

BILLY ROBERT BRIDGEWATER DB 1025 PG 568 (26)

WALTER J. KINCAID DB 805 PG 727 (27)

NEIL BAKER DB 734 PG 74 (22)

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
NO DEED REFERENCE
SEE CROATAN PURCHASE TRACT 62n (2)

ELIIS B. SALTER DB 515 PG 496 (21)

THOMAS AVON GRIFFIN DB 1276 PG 81 (24)

LAURIE RENNIE WYNNE DICKERSON DB 1205 PG 722 PC E SLD 188 (28) (28Z)

WILLIAM D. WYNNE, et ux DB 2653 PG 481 PC H Slide 83F (29)

JEFFREY A. WYNNE DB 2653 PG 478 PC H Slide 83F (31)

-RP2A-

PIs Sta 86+48.79 Θs = 5°12' 38.3" Ls = 247.00' LT = 164.74' ST = 82.40'

PIs Sta 89+78.13 Θs = 5°12' 38.3" Ls = 247.00' LT = 164.74' ST = 82.40'

PI Sta 93+06.20 Δ = 20°31' 11.8" (LT) D = 4°13' 08.9" L = 486.35' T = 245.81' R = 1,358.00' SE = 0.065 RO = 247.00' DS = 50 mph

PIs Sta 96+29.15 Θs = 5°12' 38.3" Ls = 247.00' LT = 164.74' ST = 82.40'

-L-

PI Sta 536+76.49 Δ = 2°01' 07.3" (RT) D = 0°34' 55.5" L = 346.80' T = 173.42' R = 9,843.00' SE = 0.025 RO = 125.00' DS = 60 mph

-SERVRD-

PI Sta 34+31.23 Δ = 5°59' 49.2" (RT) D = 1°59' 44.4" L = 300.50' T = 150.39' R = 2,871.00' SE = NC DS = 30 mph

PI Sta 41+28.27 Δ = 1°23' 00.5" (RT) D = 0°41' 56.3" L = 197.93' T = 98.97' R = 8,197.00' SE = NC DS = 30 mph

PI Sta 53+20.57 Δ = 2°33' 29.8" (LT) D = 1°14' 50.9" L = 205.08' T = 102.56' R = 4,593.00' SE = NC DS = 30 mph

SEE SHEET 68 FOR PROFILE -L-
SEE SHEET 84 FOR PROFILE -RP2A-
SEE SHEET 92 AND 93 FOR PROFILE -SERVRD-
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	38
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Fax
NC License NO.: F-0105

-L-
PIs Sta 548+94.45
Θs = 0° 38' 46.1"
Ls = 148.00'
LT = 98.67'
ST = 49.33'

PI Sta 555+33.32
△ = 10° 16' 02.6" (LT)
D = 0° 52' 23.3"
L = 1,175.91'
T = 589.53'
R = 6,562.00'
SE = 0.025
RO = 150.00'
DS = 60 mph

-SERVEXT-
PI Sta 18+96.44
△ = 8° 19' 25.3" (LT)
D = 1° 54' 35.5"
L = 435.83'
T = 218.30'
R = 3,000.00'
SE = NC
DS = 30 mph

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

-L- TS Sta. 547+95.79
-L- SC Sta. 549+43.79
-SERVEXT- POT Sta. 10+00.00
-SERVEXT- PC Sta. 16+78.15
550
555
560

MATCH LINE STA. 547+00 SEE SHEET 37

MATCH LINE STA. 561+00 SEE SHEET 39

38

UNKNOWN OWNER

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL QQ
300' TAPER
-G13- ACCESS PT CUL-DE-SAC TURN AROUND 35' RADIUS 3' SHOULDERS CENTER EL = 31.45'
END WW FENCE
SPECIAL LATERAL 'V' DITCH SEE DETAIL R
SPECIAL LATERAL 'V' DITCH SEE DETAIL S
SPECIAL LATERAL 'V' DITCH SEE DETAIL PP
DITCH CLEANOUT (20 FT)
CL B RIP RAP EST. 5 TONS EST. 14 SY GF
STANDARD 2' BASE DITCH SEE DETAIL RR DDE=13 C.Y.
CL B RIP RAP EST. 3 TONS EST. 10 SY GF
MEDIAN 'V' DITCH SEE DETAIL NN
780' TAPER
END PROP. EXPRESSWAY GUTTER -L- STA. 552+78.50
EXISTING 12"RCP PIPE CLEANOUT
EXISTING 18"RCP PIPE CLEANOUT
RETAIN
RETAIN EXIST R/W
EXIST P/L EXIST R/W
EXIST P/L 159.00' RT -L-
EXIST P/L 166' RT -L-
EXIST P/L 187.00' RT -L-
LEROY SMITH DB 630 PG 31
C.O. BELANGIA DB 425 PG 457

-SERVRD- N 3°14'26.6" E
-SERVRD- PC Sta. 52+18.01
-SERVRD- PT Sta. 54+23.09
-SERVRD- POT Sta. 56+74.26
-SERVEXT- N 3°09'46.6" E

RICKY E. DICKERSON DB 1522 PG 914 — 34, 34Z
RICKEY E. DICKERSON DB 1232 PG 110 — 35, 35Z
JEFFREY A. WYNNE DB 2653 PG 478 PC H Slide 83F — 31
DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST NO DEED REFERENCE SEE CROATAN PURCHASE TRACT 62n — 2
DAVID ARLIN TIVNAN DB 1336 PG 1023 — 37
MAGGIE M. SMITH DB 1447 PG 726 — 63
DEPARTMENT OF AGRICULTURE CROATAN NATIONAL FOREST NO DEED REFERENCE SEE CROATAN PURCHASE TRACT 62n

SEE SHEET 68 FOR PROFILE -L-
SEE SHEET 93 FOR PROFILE -SERVRD-
SEE SHEET 93 FOR PROFILE -SERVEXT-
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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amcclain

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	39
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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(919) 781-4626 Phone (919) 781-4865 Fax
NC License NO.: F-0105

-L-
PI Sta 555+33.32
Δ = 10° 16' 02.6" (LT)
D = 0° 52' 23.3"
L = 1,175.91'
T = 589.53'
R = 6,562.00'
SE = 0.025
RO = 148.00'
DS = 60 mph

PIs Sta 561+69.03
Θs = 0° 38' 46.1"
Ls = 148.00'
LT = 98.67'
ST = 49.33'

-SERVEXT-
PI Sta 18+96.44
Δ = 8° 19' 25.3" (LT)
D = 1° 54' 35.5"
L = 435.83'
T = 218.30'
R = 3,000.00'
SE = NC
DS = 30 mph

NAD 83

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
NO DEED REFERENCE
SEE CROATAN PURCHASE TRACT 62n

ROBERT B. HARDISON
DB 1006 PG 50
PC C SLD 214

RAYMOND W. HARDISON
DB 1007 PG 332
PC C SLD 214

BARBARA H. GIBBLE
DB 1488 PG 477

UNKNOWN OWNER

MATCH LINE STA. 561+00 SEE SHEET 38

MATCH LINE STA. 575+00 SEE SHEET 40

-L- CS Sta. 561+19.69

-SERVEXT- PT Sta. 21+13.97

-SERVEXT- POT Sta. 21+64.81

-L- ST Sta. 562+67.69

-L- PC Sta. 573+26.28

565

570

N 5° 09' 38.7" W

N 5° 16' 08.7" W

-BY38-502

-BL-597

RETAIN EXIST R/W

SPECIAL LATERAL 'V' DITCH SEE DETAIL PP

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL KK

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL QQ

CL B RIP RAP EST. 5 TONS EST. 14 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

CL B RIP RAP EST. 1 TONS EST. 30 SY GF

MEDIAN 'V' DITCH SEE DETAIL NN

REMOVE

660' TAPER

RIPRAP SHALL BE INSTALLED FLUSH WITH CHANNEL BANKS AND BED

GPSRI015-27

GPSRI015-28

CLYDE BELANGIA
DB 1002 PG 475

SHIRLEY BELANGIA POWELL
DB 1345 PG 823
PC C SLD 302

EMMA C. HARTFORD
DB 702 PG 30

EMMA CATON BELANGIA
DB 1462 PG 846
MB 3 PG 114

DALE WAYNE MAGEE
DB 870 PG 853

R.L. BELANGIA
DB 1462 PG 841

R.L. BELANGIA
DB 425 PG 459

NANCY C. BAREFOOT
DB 1484 PG 886

WILLIAM JACKSON ROWE
DB 972 PG 989

SAMMY E. EBRON
DB 832 PG 595

SEE SHEETS 69 FOR PROFILE -L-
SEE SHEETS 93 FOR PROFILE -SERVEXT-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
U:\projects\6729-02\CADD\R1015\Roadway\Proj\r-1015_rdy_psh39.dgn
amoglia

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	40
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4613 Fax
NC License NO.: F-0105

NAD 83

-L-
PI Sta 577+82.40
△ = 8° 41' 19.9" (LT)
D = 0° 57' 15.5"
L = 910.49'
T = 456.12'
R = 6,003.93'
SE = 0.030
SE = 0.030
DS = 60 mph

RAYMOND W. HARDISON
DB 1007 PG 332
PC C SLD 214

BARBARA H. GIBBLE
DB 1488 PG 477

WILLIAM L. HARDISON
DB 1006 PG 44
PC C SLD 214

WILLIAM JACKSON ROWE
DB 975 PG 98

SAMMY E. EBRON
DB 1545 PG 572

GEORGE E. MORRISON
DB 1324 PG 73

REBECCA JOHNSON SMITH
DB 1199 PG 982

MATCH LINE STA. 575+00 SEE SHEET 39

END TIP PROJECT R-1015
END CONSTRUCTION
-L- POC STA 579+17.51

-L- PT Sta. 582+36.78

+17.51 -L- 70.00' LT

+17.51 -L- 70.00' RT

CL B RIP RAP
EST. 3 TONS
EST. 10 SY GF

-BY3B-501

-BL-599

-BY4-500

RETAIN

REMOVE

RETAIN SYSTEM

MEDIAN 'V' DITCH SEE DETAIL NN

SEE DETAIL B

660' TAPER

18" RCP-W

2GI-D

4001

4002

4005

4006

ISBLK & FD

ABAND

ISBKD

HTR

ISFD

REPEATER

EXIST. R/W

SR 1162 17.5' BST

US 70 24.5' BST

45' BST

SEE SHEET 70 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
U:\R&H\2017\17729-02\CADD\R1015\Roadway\Proj\r-1015_rdy_psh40.dgn
jmadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	41
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brian E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Voice (919) 781-4865 Fax
NC License NO.: F-0105

-RPIA-
PIs Sta 1+27.46
Θs = 1° 56' 40.7"
Θs = 17° 29' 42.6"
Ls = 200.00'
LT = 127.46'
ST = 74.24'

PI Sta 6+08.39
△ = 102° 27' 39.0" (RT)
D = 17° 28' 05.6"
L = 586.56'
T = 408.39'
R = 328.00'
SE = 0.08
RO = 200.00'
DS = 35 mph

-RPIAB-
PIs Sta 18+57.70
Θs = 2° 14' 27.6"
Ls = 231.00'
LT = 154.01'
ST = 77.01'

PI Sta 21+15.30
△ = 7° 00' 00.0" (LT)
D = 1° 56' 24.9"
L = 360.78'
T = 180.61'
R = 2,953.00'
SE = 0.035
RO = 144.00'
DS = 50 mph

PIs Sta 23+72.47
Θs = 2° 14' 27.6"
Ls = 231.00'
LT = 154.01'
ST = 77.01'

PI Sta 29+95.29
Θs = 2° 17' 30.6"
Ls = 200.00'
LT = 133.34'
ST = 66.68'

NAD 83

MATCH LINE -RP1AB- STA.15+00 SEE SHEET 7

MATCH LINE -RP1A- STA. 4+00 SEE SHEET 8

MATCH LINE -RP1AB- STA.29+00 SEE SHEET 42

MATCH LINE -RP1CD- STA. 23+60 SEE SHEET 7

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)

1

-RPIA- ST Sta. 0+00.00 =
-RPIAB- ST Sta. 22+04.84 (47' LT)

-RPIAB- CS Sta. 22+95.46

-RPIAB- ST Sta. 25+26.46

-RPIAB-
TS Sta. 28+61.95

-RPIA- SC Sta. 2+00.00

-RPIAB- TS Sta. 17+03.69

-RPIAB- SC Sta. 19+34.69

+00.00 -RP1A-
75.00' RT

+95.46 -RP1AB-
125.00' LT

+26.46 -RP1AB-
125.00' LT

+56.38 -RP1AB-
125.00' LT

300' MEDIAN TRANSITION

TIE TO EXISTING CHANNEL

SPECIAL CUT 8' BASE DITCH
SEE DETAIL OOO

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

MEDIAN 'V' DITCH
SEE DETAIL QQQ

360.78' MEDIAN END LANE TRANSITION

REMOVE SYSTEM

N 43° 19' 42.6" W

FILL EXISTING CHANNEL

SPECIAL CUT 8' BASE DITCH
SEE DETAIL A

GRADE TO DRAIN

REMOVE

GPS R1015-4

N 51° 08' 32.8" W

-RPICD-

CLASS I RIP RAP
EST. 15 TONS
EST. 30 SY GF

BEGIN WW FENCE

END WW FENCE

SPECIAL CUT 5' BASE DITCH
SEE DETAIL MMM

REMOVE APPROX. 12' OF PIPE TO OUTLET AT BASE OF DITCH

SPECIAL CUT 5' BASE DITCH
SEE DETAIL NNN

+39.40 -RP1CD-
70.00' RT

+38.20 -RP1CD-
87' RT

+37.27 -RP1CD-
100.00' RT

+61.95 -RP1AB-
90.00' RT

+22.00 -RP1CD-
87.00' RT

+80.00 -RP1CD-
PROP R/W
124.00' RT

+95.00 -RP1CD-
100.54' RT

+17.52 -RP1CD-
88.09' RT

+43.11 -RP1CD-
100.68' RT

+69.02 -RP1CD-
115' RT

+79.92 -RP1CD-
100.00' RT

+48.92 -RP1CD-
100.00' RT

+30.00 -RP1CD-
121.00' RT

+84.00 -RP1CD-
121.00' RT

+37.00 -RP1CD-
121.00' RT

-RPICD- TS Sta. 31+48.92

-RPICD- SC Sta. 33+79.92

G2 - GATED ENCROACHMENT
SEE X-9 FOR GRADE
16' PAVED W/2' SHLD

HANELOCK CITY LIMIT

ARMISTEAD PROPERTIES, LLC.
DB 1936 PG 335

40

MARINE FEDERAL CREDIT UNION
DB 1765 PG 449

41

-RPICD- PT Sta. 36+93.06
-RPIAB- Sta.28+39.21 (23.50' RT)

-RPICD-
PIs Sta 33+02.93
Θs = 2° 06' 19.9"
Ls = 231.00'
LT = 154.01'
ST = 77.01'

PI Sta 35+36.61
△ = 5° 42' 30.3" (RT)
D = 1° 49' 22.7"
L = 313.14'
T = 156.70'
R = 3,143.00'
SE = 0.04
RO = 231.00' (144.00')
DS = 50 mph

SEE SHEET 73 FOR PROFILE -RPIAB-
SEE SHEET 76 AND 77 FOR PROFILE -RPICD-
SEE SHEET 71 FOR PROFILE -RPIA-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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smcclin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	42
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Phone (919) 781-4865 Fax
NC License NO.: F-0105

-RP1AB-
PIs Sta 29+95.29 PI Sta 35+60.90
Θs = 2° 17' 30.6" Δ = 22° 34' 25.3" (RT)
Ls = 200.00' D = 2° 17' 30.6"
LT = 133.34' L = 984.96'
ST = 66.68' T = 498.95'
R = 2,500.00'
SE = 0.040
R0 = 200.00'
DS = 50 mph

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)
1

HAVELOCK CITY LIMIT
CITY OF HAVELOCK
DB 983 PG 598

COMMUNITY CHRISTIAN FELLOWSHIP, INC.
DB 1040 - PG 365
5133.853 SQ M (CADD)

FIRST FLIGHT FEDERAL CREDIT UNION
DB 1567 PG 26
55

NATIONAL RETAIL PROPERTIES, LP
DB 3293 PG 370
54

HAVELOCK HWY 70, LLC.
DB 3147 PG 568
42
(NO CLAIM)

JOEL R. BANKS
DB 1427 - PG 618
3682.654 SQ M (DEED)
43
(NO CLAIM)

WADE CARY ENTERPRISES, INC.
DB 1155 - PG 1127
2821 SQ M (CADD)
44
(NO CLAIM)

EL CERRO GRANDE #6, INC.
DB 2119 PG 407
PC "C" SLIDE 6C
45
(NO CLAIM)

MARINE FEDERAL CREDIT UNION
DB 1765 PG 449
41

DANIEL G. KAMIN HAVELOCK ENTERPRISES
DB 1522 - PG 851

MATCH LINE -RP1AB- STA 29+00 SEE SHEET 41

MATCH LINE -RP1AB- STA 40+00 SEE SHEET 42A

-RP1AB- SC Sta 30+61.95

+91.34 -RP1AB- 122.51' LT
+02.66 -RP1AB- 104.65' LT
+01.75 -RP1AB- 89.30' LT EXIST R/W END WW FENCE
+01.92 -RP1AB- 99.84' LT
+77.00 -RP1AB- 80.00' LT EXIST R/W
+30 -RP1AB- 80.00' LT EXIST R/W
BEGIN WW FENCE
CHORD
ARC
300' TAPER
100' TAPER
RETAIN SYSTEM
FIELD ADJUST EXISTING DI TOP ELEVATION TO PROP FILL SLOPE ELEVATION
EXIST R/W 90.00' LT -RP1AB-
REMOVE SYSTEM
CONVERT BLIND JB TO JB W/MH
REMOVE EXIST. 24" RCP
REMOVE EXIST 30" CMP
REMOVE DI AND 18" CMP
REMOVE APPROX. 2' +/- OF 15" HDPE TO TIE TO PROP DI
MIN. DEPTH DI SEE SPECIAL DETAIL (SHEET 2C-3)
600' LANE TRANSITION
CL B RIP RAP EST. 2 TONS EST. 7 SY GF
CL B RIP RAP EST. 8 TONS EST. 21 SY GF
SPECIAL CUT 5' BASE DITCH SEE DETAIL NNN
DITCH "CLEAN OUT FROM OUTLET OF 15" RCP TO INLET OF 30" RCP
RETAIN 15" RCP
EXIST R/W 100' RT -RP1AB- +25.45 -RP1AB- 90.00' RT
BM4
ISBK BUS
ISM BUS
COMMUNITY CHRISTIAN FELLOWSHIP
MTL CANOPY
CONC
TANK VENTS
NORTH SHEPARD ST

SEE SHEETS 74 FOR PROFILE -RP1AB-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

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11/2/2018
dmadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	42A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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moffatt & nichol
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RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 TEL (919) 781-4627 FAX
NC License NO.: F-0105

NAD 83

-RP1AB-
PI Sta 35+60.90
Δ = 22° 34' 25.3" (RT)
D = 2° 17' 30.6"
L = 984.96'
T = 498.95'
R = 2,500.00'
SE = 0.040
RO = 200.00'
DS = 50 mph

PIs Sta 41+13.59
θs = 2° 17' 30.6"
Ls = 200.00'
LT = 133.34'
ST = 66.68'

-RP1AB- CS Sta. 40+46.91
-RP1AB- ST Sta. 42+46.91
-RP1AB_REV- POT Sta. 51+95.74

END PAVING US 70 BUS
END CONSTRUCTION US 70 BUS
-RP1AB- POT STA 45+00.00

+00 SEE SHEET 42

MATCH LINE -RP1AB- STA 40+00

FIRST FLIGHT FEDERAL CREDIT UNION
DB 1567 PG 26
55

4 SISTERS-00, LLC
DB 1210 PG 343
56

C.G.W., INC.
DB 2411 PG 600

CWS HOLDINGS, LLC
DB 2905 PG 867
MB 2200 PG 142

QUICKER CARE PROPERTIES, LLC
DB 3264 PG 292

MAHENDRA G. PATEL, ET UX
DB 1346 PG 334

CRAVEN COUNTY ALCOHOLIC BEVERAGE CONTROL BOARD
DB 917 PG 248
DB 2543 PG 429

SKYLINE 81 GLOBE INVESTORS, LLC
DB 3355 PG 441

PNF REALTY, LLC
DB 1742 PG 67

VETERINARY FACILITIES, LLC
DB 2799 PG 621

BOB HILL ENTERPRISES, INC.
DB 1019 PG 510

McDONALD'S REAL ESTATE COMPANY
DB 3375 PG 725

MARCUS BOWMAN
DB 2134 PG 910

EL CERRO GRANDE #6, INC.
DB 2119 PG 407
PC "G" SLIDE 6C
45
(NO CLAIM)

BOB HILL ENTERPRISES, INC.
PC "G" SLIDE 6-C
DB 1347 PG 1092
46
(NO CLAIM)

FIELD ADJUST EXISTING DI TOP ELEVATION TO PROP. FILL SLOPE ELEVATION
REMOVE EXIST. 15" RCP
+61 -RP1AB- 102' LT PROP R/W
+84 -RP1AB- 102' LT PROP R/W
+00.00 -RP1AB- 97.00 LT
+00.00 -RP1AB- 85.00' LT EXIST R/W
+46.91 -RP1AB- 85.00' LT
+58.99 -RP1AB- 85.00' LT EXIST R/W
+65.00 -RP1AB- EX RW
RETAIN SYSTEM
RETAIN
REMOVE SYSTEM
CL B RIP RAP EST. 2 TONS EST. 7 SY GF
TIE PROP. 15" RCP TO EXIST. DI BOX
200' TRANS
25.00' TYP
40.00
50.00' TYP
+46.91
-BY-15
-BY-16
EXISTING R/W
N 16° 10' 16.1" W

SEE SHEETS 74 AND 75 FOR PROFILE -RP1AB-

11/2/2018
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dmadigan

8/17/99

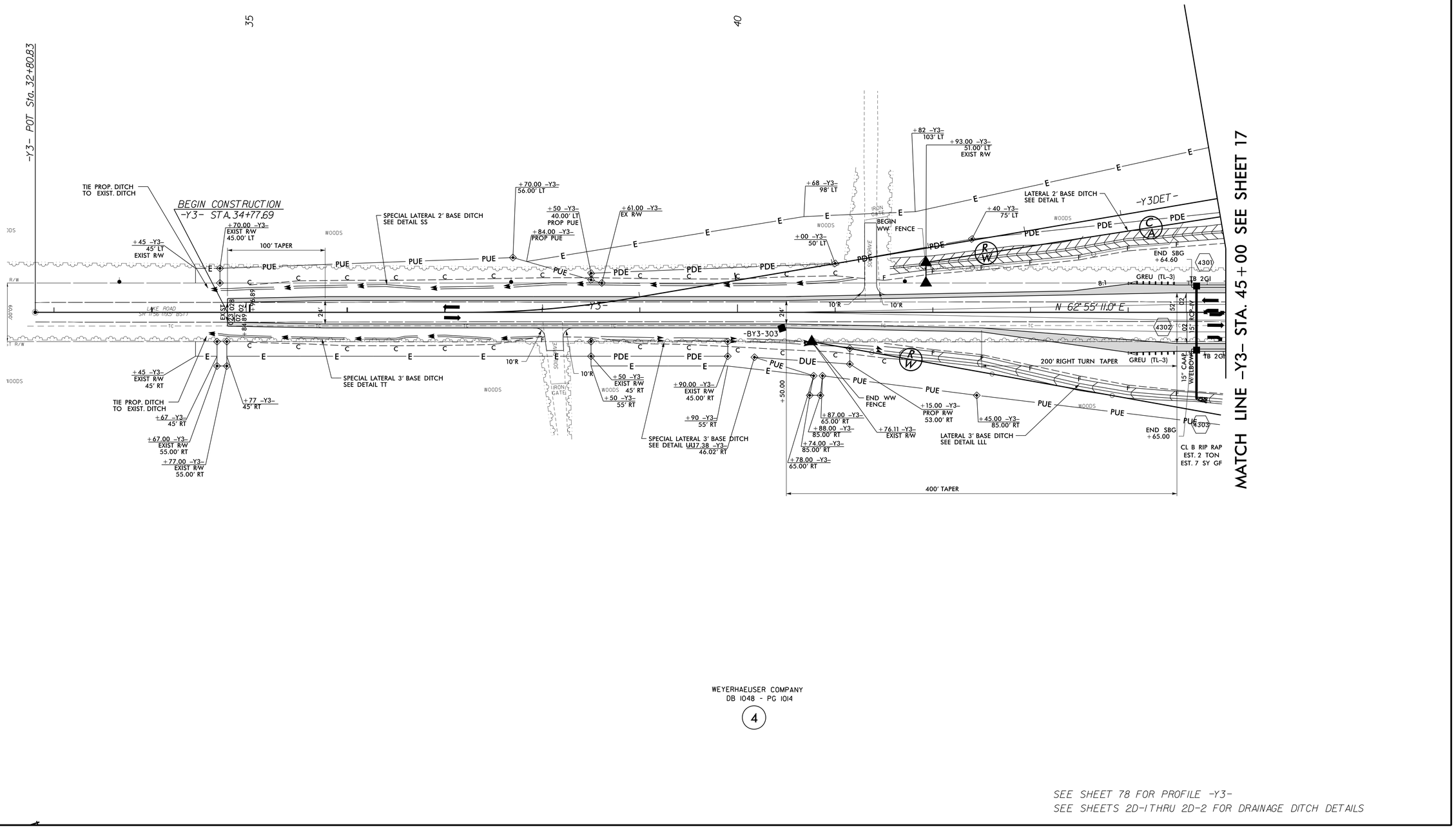
PROJECT REFERENCE NO.	SHEET NO.
R-1015	43
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4629 Fax
NC License NO.: F-0105



WEYERHAEUSER COMPANY
DB 1048 - PG 1014
4

SEE SHEET 78 FOR PROFILE -Y3-
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

1/2/2018
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smcallin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	44
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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(919) 781-4626 (919) 781-4627 Fax
NC License NO.: F-0105

NAD 83

WEYERHAEUSER COMPANY
DB 1048 - PG 1014
4

S 24°27'28" W
265.07'

S 65°27'32" E
155.08'

N 65°10'05" W
98.69'

S 65°10'50" E
712.90'

ROBERT SAMUEL CLARK, et ux
DB 654 - PG 223
DB 1011 - PG 798
59

MILTON RAY GRIFFIN
DB 1058 - PG 430
60

FOREST OAKS MEMORIAL GARDENS, INC.
DB 1055 - PG 812
DB 1039 - PG 450
61

65

70

S 65°09'52" E
200.03'

S 65°10'49" E
428.20'

N 24°53'06" E
109.71'

ELLA FAY STEELE
DB 1144 - PG 919
58

S 25°09'02" W
99.78'

S 25°09'02" W
99.32'

JEAN E. SANBORN
DB 1086 - PG 698
47

LYNN WILSON, et ux
DB 615 - PG 73
57

S 65°06'56" E
208.40'

-Y3- PT Sta. 68+40.15

LATERAL 3' BASE DITCH
SEE DETAIL U

100.00'

POWERLINE EASEMENT

-Y3DET-

PDE

200' RIGHT TURN TAPER

PROP. SBG

+50 -Y3-
115' LT

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF
+50 -Y3-
95' LT

+98.86 -Y3-
50.00' LT

END SBG
+43.99

LATERAL 3' BASE DITCH
SEE DETAIL SSS

+50 -Y3-
62' LT

+50 -Y3-
75' LT

END WW FENCE

FILL IN POOL

SPECIAL LATERAL
'V' DITCH
SEE DETAIL S

EXIST R/W
50' LT -Y3-

EXIST R/W
45' LT -Y3-

+35 -Y3-
72' LT

+55 -Y3-
55' LT

+50 -Y3-
50' LT

+80 -Y3-
65' LT

EXIST P4 -Y3-
50.00' LT

SPECIAL LATERAL 'V' DITCH
SEE DETAIL R

+00.00 -Y3-
EXIST R/W
45' LT

CL B RIP RAP
EST. 8 TONS
EST. 21 SY GF

REMOVE
EXIST. 18" RCP

12" CONC

48" SPLIT RAIL

72" BOARD

72" BLK WALL

TIMBER CURB

CONC PAD

HTR

SHED

PROPANE TANK

4416

4407

4450

4405

4404

4403

4401

4402

4415

4409

15'R

24' TYP

42.86'

400' TAPER

CHORD

GREU (TL-3) 8:1

-BY3-306

+25.00 -Y3-
PROP R/W

+98.86 -Y3-
100.00' RT

+80.00 -Y3-
90.00' RT

+00.00 -Y3-
50.00' RT

+63.00 -Y3-
PROP R/W

+73.00 -Y3-
79.00' RT
90.00' RT

+63.00 -Y3-
80.00' RT
90.00' RT

EXIST P1
50.00' RT -Y3-

LATERAL 2' BASE DITCH
SEE DETAIL M

+40.15 -Y3-
50' RT
45' RT

+54.00 -Y3-
62.00' RT
72.00' RT

+44.00 -Y3-
62.00' RT
72.00' RT

+73.00 -Y3-
62.00' RT
72.00' RT

+63.00 -Y3-
62.00' RT
72.00' RT

MINIMIZE IMPACTS TO ORCHARD

+72.00 -Y3-
40.00' RT
EX. R/W

+00.00 -Y3-
EXIST R/W
45' RT

END CONSTRUCTION
-Y3- STA. 74+00.00

N 24° 41' 48.0" E

PUE

DUE

-Y3- PC Sta. 61+92.86

MATCH LINE -Y3-
STA. 61+00 SEE SHEET 17

-Y3-
PI Sta 65+31.96
△ = 38°13' 23.0" (LT)
D = 5° 57' 37.2"
L = 641.29'
T = 333.09'
R = 961.28'
SE = 0.08
RO = 192.00'
DS = 50 mph

WEYERHAEUSER COMPANY
DB 1048 - PG 1014
4

ROBERT SAMUEL CLARK, et ux
DB 879 - PG 362
48

SEE SHEET 79 FOR PROFILE -Y3-
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

1/2/2018
05/6/8729-02\CADD\R1015\Roadway\Proj\r-1015_rdy_psh44.dgn
dmadlin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	45
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brian F. Anderson

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moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 Fax 781-4869
NC License NO. F-0105

MICHAEL O. WOODRUFF, et ux
DB 1494 - PG 68

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

NAD 83

EDWARD J. DESTEFANO, et ux
DB 772 - PG 760

WILLIAM LESLIE GRIFIN
DB 1243 - PG 364

MARGARET ELLEN JONES
DB 1493 - PG 142
50

DANIEL F. WALSH, IV, et ux
DB 1153 - PG 605
51

WILLIAM D. WANICK, et ux
DB 1596 - PG 613

MALCOLM D. CIESZKO
DB 1092 - PG 361
49

UNITED STATES AGRICULTURE
CROATAN NATIONAL FOREST
2

-Y4DR-
PI Sta 10+97.71
△ = 80° 24' 31.6" (RT)
D = 95° 29' 34.7"
L = 84.20'
T = 50.71'
R = 60.00'
SE = NC

-Y4DR- PT Sta. 11+31.20

-Y4DR- PC Sta. 10+47.00

-Y4DR- POT Sta. 10+00.00

-Y4- POT Sta. 38+65.00

-Y4- POT Sta. 32+60.00

BEGIN CONSTRUCTION
BEGIN OVERLAY
-Y4- STA. 33+50.00

BEGIN GRADE
-Y4- STA. 34+40.00

MATCH LINE -Y4- STA. 40+80 SEE SHEET 21

SEE SHEET 83 FOR PROFILE -Y4-
SEE SHEET 90 FOR PROFILE -Y4DR-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

DATE: 8/2/2018
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smcclin

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	46
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 (919) 781-4629 Fax
NC License NO.: F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

N 27°02'27" W 9750'

NAD 83

DENNIS R. LAUGHLIN
DB 1629 - PG 981
DB 1629 - PG 977
52

50

55

60

-Y4- PC Sta. 49+51.58

-Y4- PT Sta. 50+76.36

-Y4- PC Sta. 53+38.07

-Y4- PT Sta. 56+35.42

-Y4- POT Sta. 60+65.28

MATCH LINE -Y4- STA. 48+30 SEE SHEET 21

PUE

F

E

TDE

HW

BZ 1

BZ 2

JS

TB

SBG

RB

DUE

WOODS

POWERLINE EASEMENT

70.00'

+76.36 -Y4- 100.00' LT

+51.58 -Y4- 100.00' LT

+45 -Y4- PROP R/W 125' LT

+85 -Y4- PROP R/W 125' LT

PIPE INLET CHANNEL SEE DETAIL XX

TIE TO EXISTING DITCH

CL I RIP RAP

TIE PROP. DITCH TO NATURAL GROUND

STANDARD 3' BASE DITCH SEE DETAIL N S=1.032% DDE=20CY

+38.07 -Y4- 100.00' LT

+33.00 -Y4- 127.00' LT 117.00' LT

+42.0 -Y4 127.00' LT

+07.00 -Y4- 177.00' LT

+30.00 -Y4- 160.00' LT

+58.34 -Y4- 114.00' LT

BEGIN WW FENCE

+16.00 -Y4- 50.00' LT

PROP PUE 54.95' LT -Y4-

+60.32 -Y4- PROP R/W LT

LATERAL 3' BASE DITCH SEE DETAIL RR DDE = 63 CY

SEE SPECIAL DETAIL (SHEET 2C-2)

GPS RI015-12

PROP SBG

CLASS-B RIPRAP 8 TONS

CL B RIP RAP EST. 1 TON EST. 5 SY GF

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

REMOVE EXIST. 2@40 CMP

END SBG +58.00

END SBG +92.00

GREU (TL-3)

BY4-404

BY4-405

8:1

21.00' TYP

END WW FENCE

BEGIN WW FENCE

LATERAL 2' BASE DITCH SEE DETAIL T DDE = 228 CY

+51.58 -Y4- 100.00' RT 147.00' RT

TIE PROP. DITCH TO NATURAL GROUND

PIPE OUTLET CHANNEL SEE DETAIL YY

+90 -Y4- 155' RT

CL I RIP RAP

TIE TO EXISTING DITCH

+65 -Y4- 175' RT

+05 -Y4- 162' RT

+38.07 -Y4- 100.00' RT

+80 -Y4- 100' RT

+70 -Y4- 80' RT

+35.41 -Y4- 31.29' RT

+57.50 -Y4- PROP R/W 56.50' RT

+71.60 -Y4- 60.00' RT

+86.42

SPECIAL LATERAL 3' BASE DITCH SEE DETAIL GGG

+78.20 -Y4- EXIST R/W 57.40' LT

+67.00 -Y4- EXIST R/W 57.40' LT

+45.00 -Y4- 50.00' LT EXIST R/W

+00 -Y4- 55' LT

+16 -Y4- PROP R/W

+35.42 -Y4- 50.00' LT

+96 -Y4- EXIST R/W 58' LT

MAINTAIN EXISTING DITCH

DITCH BLOCK SEE DETAIL ZZ

REMOVE EXIST. 18" RCP

REMOVE

EXIST PUE -Y4- 45' RT

END CONSTRUCTION -Y4- POT STA. 59+37.00

+37.00 -Y4- EXIST R/W 50.00' RT

SPECIAL LATERAL V DITCH SEE DETAIL R

END WW FENCE

+81.52 -Y4- 30.04' RT

50.00' TAPER

CL I RIP RAP EST. 15 TONS EST. 30 SY GF

SPECIAL LATERAL V DITCH SEE DETAIL R

-Y4- +87.00 73.00' RT

+95.00 -Y4- 60.00' RT 75.00' RT

STANDARD 3' BASE DITCH SEE DETAIL N S=0.012 FT/FT DDE= 70 CY

SPECIAL LATERAL 3' BASE DITCH SEE DETIAL HHH

TIE PROP. DITCH TO NATURAL GROUND

N 45°45'38.6" E

SR 1747 (US5 BST)

-Y4-

PI Sta 50+13.97	PI Sta 54+88.39
△ = 0° 32' 41.2" (RT)	△ = 20° 46' 34.8" (LT)
D = 0° 26' 11.8"	D = 6° 59' 14.2"
L = 124.78'	L = 297.34'
T = 62.39'	T = 150.32'
R = 13123.00'	R = 820.00'
SE = NC	SE = 0.070
	RO = 147.00'
	DS = 40 mph

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

SEE SHEET 83 FOR PROFILE -Y4-
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	47
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brook E. Anderson

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(919) 781-4626 (919) 781-1588 Fax
NC License NO.: F-0105

NAD 83

NO ASSOCIATED RECORDS FOUND FOR THIS STRUCTURE

RAILROAD SIGNAL BOX

BEGIN CONSTRUCTION -RP2AC- STA. 38+30.60

WALLACE R. POYTHRESS MTL DB 960 PG 155

WALTER J. POYTHRESS DB 823 PG 132

RETAIN EXIST R/W

RETAIN 18" RCP

RETAIN EXISTING DITCH

R-5516 CONSTRUCTION

RETAIN SYSTEM (CONSTRUCTED UNDER R-5516)

20D MEDIAN TAPER

REMOVE 36" CONC. PIPE ARCH

-RP2AC-

-BY4-513

-BY3A-514

-SR1162-

-RP2AC- PC Sta. 32+80.83

-SR1162- POT Sta. 10+00.00

-SR1162- PC Sta. 12+24.78

BEGIN PAVING -SR1162- STA. 13+83.00

BEGIN CONSTRUCTION -SR1162- STA. 13+05.00

TIE TO CONSTRUCTION PROJECT R-5516 +46.00 -RP2AC- 75.00' RT

SPECIAL LATERAL "V" DITCH SEE DETAIL DD

SPECIAL LATERAL "V" DITCH SEE DETAIL AAA

EXTEND EX. 3@9'X7' RCBC

ABANDONED 2" IN THIS AREA, AS PER FIELD INVESTIGATION UNABLE TO TRACE NO RECORDS AVAILABLE

BM27

TUCKER CREEK, LLC DB 1523 PG 854 PC F SLD 170H

JOHN TYLER JACKSON DB 2673 PG 576 PC "H" SLIDE 17-D

53

62

MATCH LINE -RP2AC- STA. 45+00 SEE SHEET 48

SEE SHEET 86 FOR PROFILE -RP2AC-
SEE SHEET 92 FOR PROFILE -SR1162-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

11/2/2018
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-1015	48
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER T. R. REID

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032581 ENGINEER Brock F. Anderson

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-RP2AC-

PI Sta 42+58.82
Δ = 16° 12' 07.2" (RT)
D = 0° 50' 02.0"
L = 1,942.92'
T = 977.99'
R = 6,870.83'
SE = EXIST

PIs Sta 53+05.42
Θs = 1° 01' 17.5"
Ls = 245.00'
LT = 163.34'
ST = 81.67'

PIs Sta 56+34.10
Θs = 2° 42' 23.6"
Ls = 248.00'
LT = 165.35'
ST = 82.68'

PI Sta 61+13.32
Δ = 17° 10' 54.0" (LT)
D = 2° 10' 57.7"
L = 787.18'
T = 396.56'
R = 2,625.00'
SE = 0.04
R0 = 200.00'
R0' = 152.00'
DS = 50 mph

PIs Sta 65+86.61
Θs = 2° 42' 23.6"
Ls = 248.00'
LT = 165.35'
ST = 82.68'

PIs Sta 71+62.67
Θs = 5° 18' 01.4"
Ls = 247.00'
LT = 164.74'
ST = 82.40'

PI Sta 75+91.31
Δ = 29° 05' 25.4" (RT)
D = 4° 17' 30.5"
L = 677.81'
T = 346.38'
R = 1,335.00'
SE = 0.065
R0 = 247.00'
DS = 50 mph

NAD 83

WALTER J. POYTHRESS
DB 823 PG 132

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 1550 - PG 641
PC "F" - SLIDE 174E
13

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2

MATCH LINE STA. -RP2AC- 45+00 SEE SHEET 47

MATCH LINE -RP2AC STA. 56+00 SEE SHEET 36

RIP RAP EA.
STONE EA.
E EA.

EXIST P/L -RP2AC-
EXIST R/W LT
EXTEND EX. 3@9'X7' RCBC
END WW FENCE
RETAIN EXIST R/W
CL B RIP RAP
EST. 1 TON
EST. 5 SY GF
GREU (TL-3)
-BY3A-515
200' MEDIAN TAPER
15" RCP-III
-RP2AC- 15" RCP-III
SEE DETAIL B
50' PS TAPER
REMOVE SYSTEM
-BY4-511
30" RCP-III
18" RCP-III
-SR1162-
GREU (TL-2)
SPEC. LATERAL 'V' DITCH
SEE DETAIL AAA
+02 -SR1162- 43' RT
+10 -SR1162- EXIST R/W
END CONSTRUCTION
END PAVING
-SR1162- STA. 16+27.00
+23.75 -RP2AC- 75.00' RT
SPECIAL LATERAL 'V' DITCH
SEE DETAIL S
+68.75 -RP2AC- 75.00' RT
CHORD
N 10°18'29.1" W
GRAVEL PARKING
HTR BUS
SHELTER
-SR1162- PT Sta. 18+58.37
-SR1162- POT Sta. 19+24.56
-RP2AC- CS Sta. 52+23.75
-RP2AC- SRS Sta. 54+68.75

JOHN TYLER JACKSON
DB 2673 PG 576
PC "H" SLIDE 17-D
62

-SR1162-
PI Sta 15+42.00
Δ = 7° 17' 22.2" (RT)
D = 1° 09' 01.9"
L = 633.58'
T = 317.22'
R = 4,980.00'
SE = NC
DS = 40 mph

SEE SHEETS 86 AND 87 FOR PROFILE -RP2AC-
SEE SHEETS 92 FOR PROFILE -SR1162-
SEE SHEETS 2D-1THRU 2D-2 FOR FRAINAGE DITCH DETAILS

JOHN TYLER
DB 2673 P
PC "H" SLID

11/2/2018
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